

It's Important to Know In Time'

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The Newspaper of the Industry

Inside Dope

By George F. Taubeneck

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Resistance to McNutt

War Manpower Commission's biggest coming headache in the future will be getting workers moved from labor surplus areas to labor shortage areas. As contract cancellations snowball, more and more cities will have unemployment problems. Yet others, engaged in making the newer weapons, will need additional labor.

The matter is complicated by the attitude of some labor-surplus cities. Not only do the workers feel loathe to leave home, but their home cities don't want them to leave—fearing loss of buying power in the future.

In some cities already the newspapers are refusing to accept advertisements from the USES and war contractors attempting to recruit labor for jobs elsewhere. The local unions also attempt to block such movements.

Trying to run this country along totalitarian lines is such a headache that even the New Dealers must get discouraged.

Trade Balance

Advices from London indicate that by the end of 1944 Argentina will have accumulated a sterling balance of more than 80 million pounds.

With a backlog like this, English exporters should find it relatively simple to block competitors out of the Argentine markets for quite awhile. Interestingly enough, much of this balance has been built up with our funds. Britain buys meats and grains from Argentina for our use abroad, because it is politically inexpedient for us to buy from Argentina.

We pay Britain, she pays Argentina, Argentina gets British pounds, with which she'll buy British goods after the war.

When It Rains, Etc.

Austin Jones, lively and popular Kerotex executive, had a chain of experiences recently which would have thrown anyone less resilient. But Austin is back on the job, moving as fast through the field as ever.

It began one afternoon in Detroit. He phoned us to say that he had some pains, and would we please refer him to a doctor. We did, and shortly afterward the doc called to say Austin would be operated upon immediately for acute appendicitis.

Four days later, back in Pittsburgh, Austin's wife went to the hospital for an emergency operation, and Austin had to make long-distance arrangements from a hospital bed for the care of his infant son.

Upon returning home to get things under control, his automobile was stolen. And the woman hired to take care of his son went AWOL.

If anyone in the industry can top this chain of unfortunate circumstances, don't tell us! It would be too much.

Rapid Turnover

Today (July 3) being this columnist's birthday, we feel like telling stories. So here come some more tales, although the rest will be louder and funnier. To start:

Some weeks ago prankish boys in our neighborhood lifted a "For Sale" sign from a vacant lot next door, and implanted it in a corner of our front

Air Conditioning & REFRIGERATION

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More Light Is Shed on the Old Controversy Over Attic Fans

By C. Dale Mericle

GRAND RAPIDS, Mich.—Operation of an attic fan can reduce the inside temperature of a house to within 3° F. of outside night temperature, but the cooler outside air drawn into the house brings with it a considerable amount of dust, it was brought out during presentation of the paper "Some Effects of Attic Fan Operation on Comfort" at the semi-annual meeting of the American Society of Heating & Ventilating Engineers at the Pantlind hotel here recently.

Prepared by Prof. W. A. Hinton of the mechanical engineering department of the Georgia School of Technology and W. G. Wanamaker, student assistant, the paper reported results of tests sponsored jointly by the Atlanta A.S.H.V.E. chapter, the A.S.H.V.E. committee on research, and the engineering experiment station of Georgia Tech.

Not only was the dry-bulb temperature of the house under test kept close to outside temperature, but the effective temperature was brought

within the comfort zone at night, chiefly due to the movement of air through the house caused by the fan's operation, it was stated by Prof. Hinton, who discussed the paper.

The house in Atlanta selected for the test was a single story frame structure without a basement, equipped with double-hung wood sash without awnings. Fan was a four-bladed propeller type, 35 in. in diameter, rated to deliver 10,000 c.f.m. at 350 r.p.m. when operating against a static pressure of 0.01 in. of water. Ceiling opening to the attic has a gross area of 17.5 sq. ft. and was covered by an expanded metal grille having 70% free area. The net areas of openings through which air left the attic totaled 25 sq. ft.

Although the fan intake grille was located near the center of the house, there were large variations in air velocities and in quantities of air entering the several windows of the house, reported Prof. Hinton. In

(Concluded on Page 4, Column 1)

Climate Institute Appoints Schanuel

DETROIT — Arthur E. Schanuel has been appointed Executive Secretary of the Indoor Climate Institute effective July 1, according to an announcement by P. B. Zimmerman, president of the organization.

Mr. Schanuel resigns his position with the National Electrical Manufacturers Association to assume his new duties. He is a former newspaper and advertising man and has a wide acquaintanceship throughout the building and public utility fields.

"With the appointment of Mr. Schanuel, the I.C.I. rounds out its first year with a complete program of organization and the establishment of policies which should give great scope, of far-reaching value to the Institute's operations," stated Mr. Zimmerman.

In this connection, I.C.I. has just issued a "Progress Report" to its members, supplemented by a Question and Answer Bulletin which clarifies the manner in which I.C.I. will function under a committee form of structure. The principal committee chairmen are as follows:

Public Information Committee, chairman, C. D. Lyford, Minneapolis-Honeywell Regulator Co.; Trade Associations Committee, chairman, J. M. McClintock, sales manager, Illinois Iron & Bolt Co.; Membership Committee, chairman, T. A. Crawford, general sales manager, Timken Silent Automatic Division; Science Committee, chairman, Willis Carrier,

(Concluded on Page 27, Column 3)

Rebuilt Freezer Demand Rising, Reports Macy's

NEW YORK CITY—Current demand for "home freezers" in the form of rebuilt ice cream cabinets is accelerating, rather than falling off, it is reported by R. H. Macy & Co. here.

Easing of the rationing regulations has apparently not affected the desire of the public to have a home freezer.

Macy's, which has been selling the rebuilt freezers since the fall of 1943, has sold some 500 units, and current sales are around the 100-a-month market, representing an increase in demand, according to George T. Mortland, sales manager of the major appliance department, which is handling sales of the unit.

Very few of those who buy such

(Concluded on Page 2, Column 5)

Utilities Told To Back 'Heat-Pump Air Conditioning

NEW YORK CITY—If utilities will promote the installation of year-around air conditioning systems depending upon the "heat pump" action of the compressor to provide winter heating, electricity consumption of the average home can be greatly increased and a more efficient heating plant provided, declared Philip Sporn, vice president in charge of engineering of the American Gas and Electric Service Corp. at the recent annual meeting of Edison Electric Institute here.

Electricity consumption of the average residence would be boosted from 1,000 to 10,000 kilowatt-hours a year with such a year-around system, according to Mr. Sporn. Electric rates would be correspondingly reduced, however, he pointed out.

At the present time there are some 40 heat pump installations in this country with others in South America and Switzerland, he said.

The heat pump is "basically the same thing as the conventional compression type refrigeration system," Mr. Sporn told utility representatives. "The heat pump is nothing more than a compression-type refrigeration system with provisions incorporated in the design to put to use

A complete description of two successful "heat pump" installations, which since 1940 have been supplying year-around air conditioning for branch offices of an Ohio utility, appears on pages 16 and 17 of this issue. The article explains how the systems operate, points out the advantages of "heat pumps," and offers suggestions for possible improvements in installation.

the heat given up by the condenser instead of discarding it.

"The name 'heat pump' is given to such a design because the heat absorbed at a low temperature level is raised or pumped to a higher level. Since this type of system is basically a refrigeration cycle, the same equipment can be used for both heating and cooling."

Installation of a heat pump system would not be too expensive, and such a system would operate efficiently and economically, Mr. Sporn said in urging utilities to promote heat pump installations.

"The all-electric home can be brought about and made as real as electric lighting in almost every American home," he declared. "In the vast majority of cases the home will not earn the right to be called all-electric until it is heated electrically. The heat pump appears to be the only practical means known today, or discernible on the horizon, for bringing this about."

Comfort Cooling Design Data in New Booklet

NEW YORK CITY—The basic data necessary for calculation of load requirements for comfort air conditioning is given in Part IV of the Fourth Edition of the Engineering Standards of the Heating, Piping and Air Conditioning Contractors National Association.

The pamphlet contains definitions of terms used in discussing air conditioning, gives examples showing the application of psychrometric relations, and also shows the method of calculating the load for comfort air conditioning.

The pamphlet brings together in one place the material which the engineer needs for his work and presents it in a handy form.

Copies of the pamphlet can be obtained from the Heating, Piping and Air Conditioning Contractors National Association, Room 1401, 1250 Sixth Ave., New York 20, N. Y.

Used Machines Kept off Market By Price Control

Cost of Putting Units Into Operation Not Covered by Ceilings

By Ross Potter

CINCINNATI — "There are over 1,000 workable refrigerators stored in dealers' warehouses in Cincinnati that will never see the light of day because they can't be sold, or repaired, or even moved, under present OPA controls without costing the dealer more money than he could ever legally get back.

"The result is a black market turnover in refrigerators probably as bad as you'll find anywhere in the country."

This was the sober opinion voiced last month by R. M. Saville, of Rash, Saville & Crawford, refrigeration service contractors for three major manufacturers in the Cincinnati area.

Key to the problem, as he sees it, is the inadequate scale of trade-in and resale values established by national OPA ruling.

What is needed is a bluebook figure that will allow the dealer to repair and guarantee the used boxes he has, and sell them at a figure that will cover parts, labor, the warehousing costs he has had to assume, and allow him a little profit in return.

Instead of this, Mr. Saville pointed out, the dealer is allowed to sell a 1930 6-cu. ft. Frigidaire, for instance, at \$21. The cost of repairing a box like this will average \$30, he estimated. A rebuilt Delco 1/2 hp. motor adds another \$15. Plus warehousing charges.

Of course, you could sell a customer the box as is for \$21 and then repair the box for him, charging present prices on parts and labor, and clear a profit that way. You could do that, he amended, if you had all the time in the world, and a full crew of servicemen and plenty of gas to send them all over the city.

As it is, the company's present manpower is made up of three

(Concluded on Page 28, Column 2)

Westinghouse Sets Up Dishwasher and Water Heater Dept.

MANSFIELD, Ohio—To plan now for anticipated heavy postwar demand for dishwashers and electric water heaters, the Westinghouse Electric Appliance Division has formed a separate department to give increased emphasis to the development, improvement, and marketing of these devices, T. J. Newcomb, sales manager, announced last week.

At the same time, Mr. Newcomb announced the appointment of M. M. Feaman, as manager of this new Water Heater and Dishwasher Department. These appliances previously were assigned to the Range Department.

Mr. Feaman is active in an industry-wide program to standardize electric water heater equipment—both electric heating elements and tanks—which it is expected will reduce the cost per unit because of more streamlined production methods of manufacture. A similar study of dishwasher design and production to achieve mass market requirements also will be undertaken.

Mr. Feaman has been with Westinghouse since 1931, spending the first seven years as merchandising supervisor in the Northwestern dis-

(Concluded on Page 2, Column 4)

Memo to: All Manufacturers Of Commercial Refrigeration And Store Fixture Equipment

Subject: Distribution in Central and Southern Ohio

Since our home office is located in a small town a little off the beaten path, not many manufacturers call on us, and we've been too busy selling equipment this past while back to call on them. But now we'd surely like either to see more of them, or at least to hear from them. Here's why:

Even though we are a bit up the side road, we do a very sizeable business as distributors of commercial refrigeration equipment throughout the Central and Southern parts of Ohio. Our financial situation is good, we have several field men out, and the war hasn't put us out of business by a long shot. So --

Right now, we're all steamed up and able to sell more equipment than we've been getting, and our postwar plans are BIG.

If some manufacturer of fixtures or equipment of any kind which would fit into our operation reads this ad, we'll certainly enjoy hearing from him right away.

E. G. Sanders

MORTON SHOW CASE CO.

Columbus

P. S. I'm now busy getting our big branch store under way, so better write me at 110 East 4th Street, Dayton, Ohio.

WE - CARRY - THE - LARGEST - STOCK - OF FIXTURES IN OHIO.

617 Filing Method Changed by WPB

(Concluded from Page 1, Column 3)

plications for certificates of necessity where tax amortization privileges are requested, which are filed simultaneously with the WPB Form 617 applications, will likewise be filed with the local WPB field office rather than with WPB, Washington, D. C. as heretofore.

Formerly, with the exception of those directed for filing elsewhere, WPB Form 617 applications involving facilities costing more than \$100,000 had to be filed with WPB in Washington, while applications for facilities costing \$100,000 or less were filed with the WPB field office.

The revised procedure for filing is in furtherance of WPB's program of decentralization.

Filing instructions for the following excepted type of projects remain the same:

As in the past, for projects financed by the War Department, the Navy Department, the United States Maritime Commission, or by the Defense Plant Corp. with the sponsorship of one of these agencies, the applicant will check with the particular agency involved to determine where to file.

Applications for farm construction, including farm buildings, continue to be filed with the county agricultural conservation committee having jurisdiction over the site.

Applications involving grants of federal funds continue to be filed with WPB in Washington.

Ted Little Appointed Agency Executive



HENRY G. "TED" LITTLE
Has been appointed vice president and general manager of Campbell-Ewald Co., advertising agency handling the Norge account.

Feaman to Manage New Westinghouse Dept.

(Concluded from Page 1, Column 5)
trict, with headquarters at Chicago. From 1938 until the start of the war he was sales promotion manager of the Range and Water Heater Department at Mansfield. Since the war he has coordinated such wartime activities as the Westinghouse Health for Victory nutrition program used by more than 1,700 war plants and the Company's Conserve schools for training servicemen and women.

Stratton Heads Crosley Refrigeration Mfg.

CINCINNATI — Lee Stratton, a former merchandising and personnel supervisor for Nash-Kelvinator Corp., has been appointed manager of refrigeration manufacturing for Crosley Corp., according to J. H. Rasmussen, commercial manager.

Mr. Stratton has had wide experience in merchandising in this country, Canada, England, and France. For several years he headed the London, England branch of a large manufacturer. With Kelvinator he served as district manager, western branch manager, and personnel director of Nash-Kelvinator's propeller plant at Lansing, Mich. Later he served as manager of the Cleveland office of procurement for defense products.

Macy's Reports Bigger Demand for Freezers

(Concluded from Page 1, Column 2)

cabinets from Macy's are farmers, the vast majority of them being city-dwelling homeowners. Suburbanites tend to buy the larger models.

The cabinets are rebuilt for Macy's by Refrigeration Corp., a refrigeration contracting firm with quarters on West 64th St. The cabinets are guaranteed to hold —10° F., and Mr. Mortland claims that temperatures are actually well below that figure.

Cabinets are sold with a one-year guarantee on all parts. The rebuilding firm services and (including the handling of guarantee calls) installs the units anywhere within a 75-mile radius of Macy's, going into outstate New York, New Jersey, and Connecticut.

Methyl chloride is the refrigerant used in this equipment.

Prices of the units ranges from \$294 for a 5-cu. ft. model to \$894 for a 16-cu. ft. model.

Phila. Service Managers Elect Ward Chairman

PHILADELPHIA—The Refrigeration Service Managers Group of The Electrical Association, at a meeting held in Association headquarters early this month, unanimously elected George P. Ward to the chairmanship for the 1944-45 season. Mr. Ward is manager of the Philadelphia Appliance Service Corp., the service division of Raymond Rosen & Co.

Mr. Ward succeeds L. A. Tucker, service manager, J. J. Pocock, Inc., who was elected to serve as chairman upon the formation of this group one year ago.

The service managers plan to meet once each month during the Summer season, discontinuing for this period the regular Thursday luncheon meetings which have been in effect since last Summer.

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Refrigerators LAST LONGER!**

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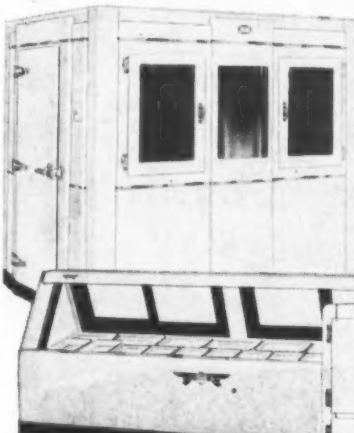
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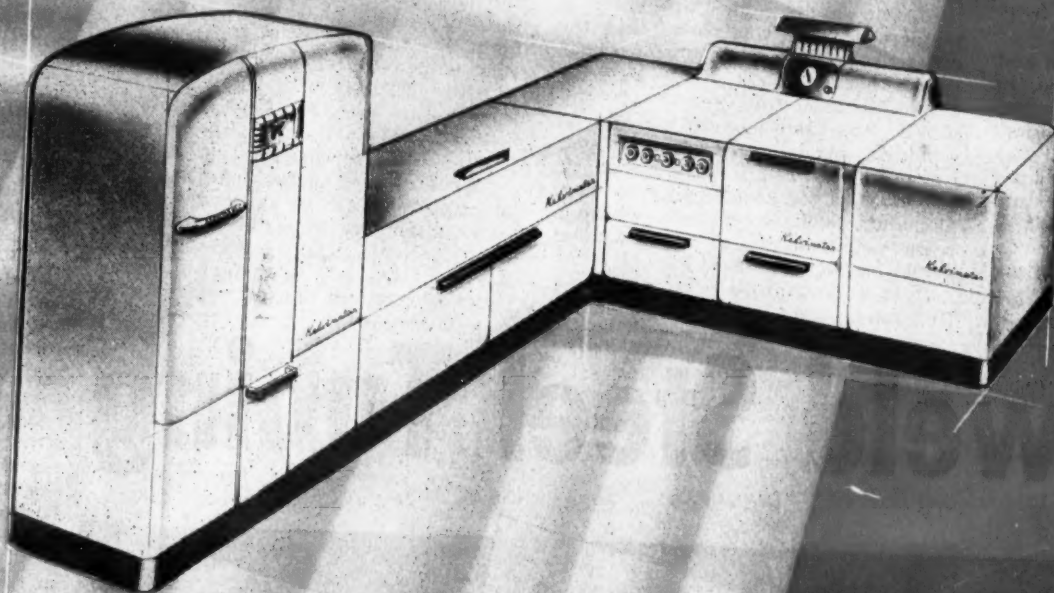
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VEGETAIRE AND DAIRY CASES Vegetaire is America's finest Refrigerated Produce Display Case. The self-serve Dairy Case represents a vital need for the modern-day merchant. Available when restrictions are removed.

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Back of it will stand all the new skills, new strength and vastly expanded facilities of Kelvinator. Ahead lies a sound, profitable business opportunity built upon a complete line of Kelvinator Refrigerators, Electric Ranges, Home Freezers and Electric Water Heaters. The full story will be told at the proper time.

Look Ahead With



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AWARDED TO NASH-KELVINATOR CORPORATION, PROPRIETARY DIVISION

DIVISION OF NASH-KELVINATOR CORPORATION
Kenosha • Milwaukee • DETROIT • Grand Rapids • Lansing

An Attic Fan Brings In Cool Night Air, But Also Sucks In Dust, Tests Reveal

(Continued from Page 1)

one room, for example, entering air velocity at the north window was 63 f.p.m., but was only 20 f.p.m. at the west window.

To measure air velocities at such points as open windows a calibrated 4 in. anemometer was used. To determine air velocities at other points throughout the house, however, heated thermocouple anemometers were employed. All measurements of air velocities, temperatures, and the mean radiant temperature were made at a height of 30 in. above the floor, generally considered the average height of a seated person in connection with sensitivity to air conditions.

In addition to variations in air velocities through various rooms there were likewise wide variations in air volumes and air changes, the tests showed. With the capacity of the fan set at 45 air changes per hour, air changes varied from 20 per hour for one room to 107 per hour for another.

"The differences in air volumes and air changes per hour were due, in part, to the resistance to airflow offered by various rooms," explained Prof. Hinton. "In general those rooms farther from the fan inlet would offer greater resistance and consequently have less airflow through them."

"Another factor that influenced the air entering various rooms was a hill directly west and to the south of the

test house which sheltered the windows of two rooms from wind coming from that direction. The windows of three other rooms were more favorably exposed to wind since the space east of the house was vacant; the nearest building was 200 ft. away. A house located 40 ft. south of the test house affected somewhat the amount of air entered the window of the south room.

"In comparing air changes per hour the volumes of the rooms should be kept in mind. Since small rooms often have windows as large as the other rooms, the volume of air entered a small room may equal that entering a larger room; but, in such a case, the smaller room has a larger number of air changes per hour due to its smaller volume."

ALL ROOMS THE SAME

"A careful check of the temperature data was made to ascertain if the large difference in air changes made an appreciable difference in temperature. It was found that the difference in temperature between rooms never exceeded 1° F.," declared Prof. Hinton.

With the fan in operation and all windows open, velocities from 18 f.p.m. to 169 f.p.m. were produced, but most of the lower velocities were at points such as corners, where a rather small degree of air movement would be expected, said Prof. Hinton.

It is important to note, he added, that while some locations had veloci-

ties much below the average, there was sufficient turbulence in the airflow to produce a reasonable degree of air movement even in corner locations.

Study of a large number of readings of mean radiant temperature taken on five different days showed that mean radiant temperature was always very near room air temperature, the difference never exceeding 3°, said Prof. Hinton. During certain periods of time, mean radiant temperature was equal to room air temperature. In the evenings when cool night air was being drawn through the house, mean radiant temperature was only slightly higher than air temperature.

"Attic fan operation reduces mean radiant temperature at approximately the same rate as it reduces room air temperature," Prof. Hinton said. "The effective temperature curve also follows the same trend as the inside air temperature curve. It is quite evident that when the fan was turned on the increase in air velocity produced an immediate drop of approximately one degree effective temperature."

According to Prof. Hinton, an effective temperature of 73° F. is recommended for summer comfort in the southeastern United States where the dry-bulb temperature ranges from 91° to 95°. In the test house this value of 73° was reached at 8 p.m. (E.S.T.) when the dry-bulb temperature was 78°, and that it is reduced still farther as the outside temperature decreases.

"Then mean radiant temperatures reported here are in agreement with what might be expected," declared Prof. Hinton. "During periods when the fan was off, transfer of heat between surfaces and air would tend

to equalize the temperature of air and surfaces. During periods when the fan was on, the mean radiant temperature was only slightly above air temperature. Previous studies of night air cooling have shown that in a frame house, surface temperatures are not more than a degree or two above room air."

"The surface temperatures reported have for the most part been ceiling surfaces, so the average would be less in some cases. Therefore, it would be impossible for mean radiant temperature to exceed air temperature by more than one or two degrees in a frame house with this type of cooling."

The results presented give some basis for a discussion of the proper number of air changes per hour," continued Prof. Hinton. "The attic fan used in a given installation should have sufficient capacity to produce the desired comfort conditions as early in the evening as possible."

"From the viewpoint of air temperature, not more than 30 or 40 air changes per hour would be economical," stated Prof. Hinton. "Nevertheless, air velocity is a factor in comfort, and the selection of the number of air changes to use must take velocities into account."

While 30 to 40 air changes per hour are sufficient to reduce the inside air temperature to within 3° of the outside temperature, it is desirable to produce higher air velocities so as to lower the effective temperature, said Prof. Hinton.

40 AIR CHANGES PER HOUR

"Satisfactory results may be obtained if fans are installed which are capable of producing 40 air changes per hour instead of the generally accepted standard of 60 air changes per hour. . . . At times when the outside air temperature is unusually high, the greater air velocities desired may be obtained by the simple expedient of closing the rooms which are not occupied," suggested Prof. Hinton.

All of the above figures of fan capacity are based on the total volume of the livable space in the house, and refer to actual air delivery and not to the maximum rated capacity of the fan, for, according to Prof. Hinton, attic fans are rated at free delivery, while flow resistances encountered in actual installations cause the actual airflow to be less than the rated capacity of the fan.

"It is further suggested that means be provided to reduce air movement when comfort has been attained . . . as what might be a pleasant breeze

at 9 p.m. may become an objectionable draft by 12 p.m. unless the fan is stopped or its capacity reduced."

"Although a variable speed motor and thermostatic controls might be used to accomplish this, the most economical means is to use a time clock which operates a switch to stop the fan motor at a time selected by the occupants of the house."

"It is interesting to estimate the difference in effective temperature between a house with attic fan and one without an attic fan," continued Prof. Hinton. "Tests have shown that air temperature in a frame house does not decrease much before 8 p.m. if no fan is used. An 84° F. dry bulb may be assumed for air temperature in the house at 8 p.m. If the air is still, as it would be without a fan, an effective temperature of 80° results; this is 7° higher than the 73° ET attained at 8 p.m. with attic fan in operation."

"The small difference between air temperature and mean radiant temperature indicates that this difference is not a large factor in determining fan capacity. Since mean radiant temperature will always be near air temperature it is important to observe that if no fan is used, mean radiant temperature will be higher than with a fan and will contribute to the discomfort experienced."

Some skepticism of the attic fan was voiced by T. T. Tucker of Atlanta, Ga., who, following the presentation of the paper, asked whether a "well insulated house with adequate window shades might not have nearly the same temperature as the frame dwelling with the attic fan?"

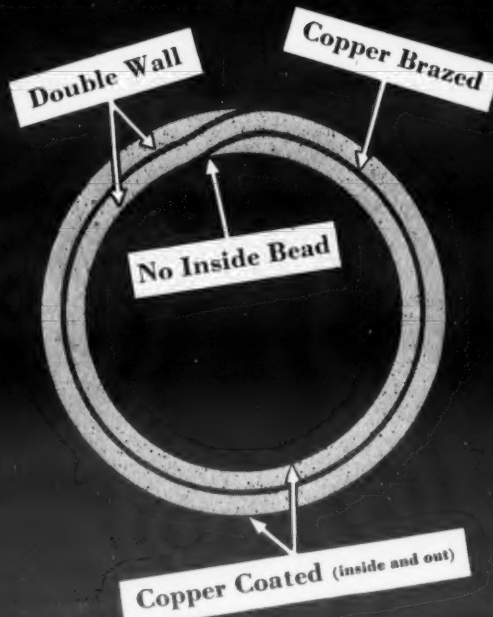
Orientation of the building, relation to prevailing winds, location with regard to other buildings also may have considerable influence on the operation of attic fans, Mr. Tucker added.

"High velocity" attic fans can produce the sensation of comfort," countered Chet Mally of Mally & Co., Detroit, who also participated in the discussion. "Velocities of 300 to 400 f.p.m. will result in high room air turbulence and consequent definite cooling effects. Dust, however," he admitted, "will be brought in by the fan operation."

Accurate determination of air velocities is dependent upon the types of instruments used, and tests with different types of anemometers will, or may, show different air velocities, pointed out Prof. G. L. Tuve of the Case School of Applied Science, Cleveland. Before comparing tests involving air velocities, first ascertain the types of instruments used, he cautioned.

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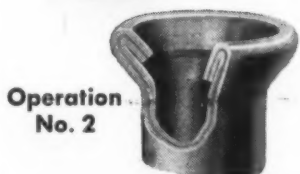
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Bundy Double Flare



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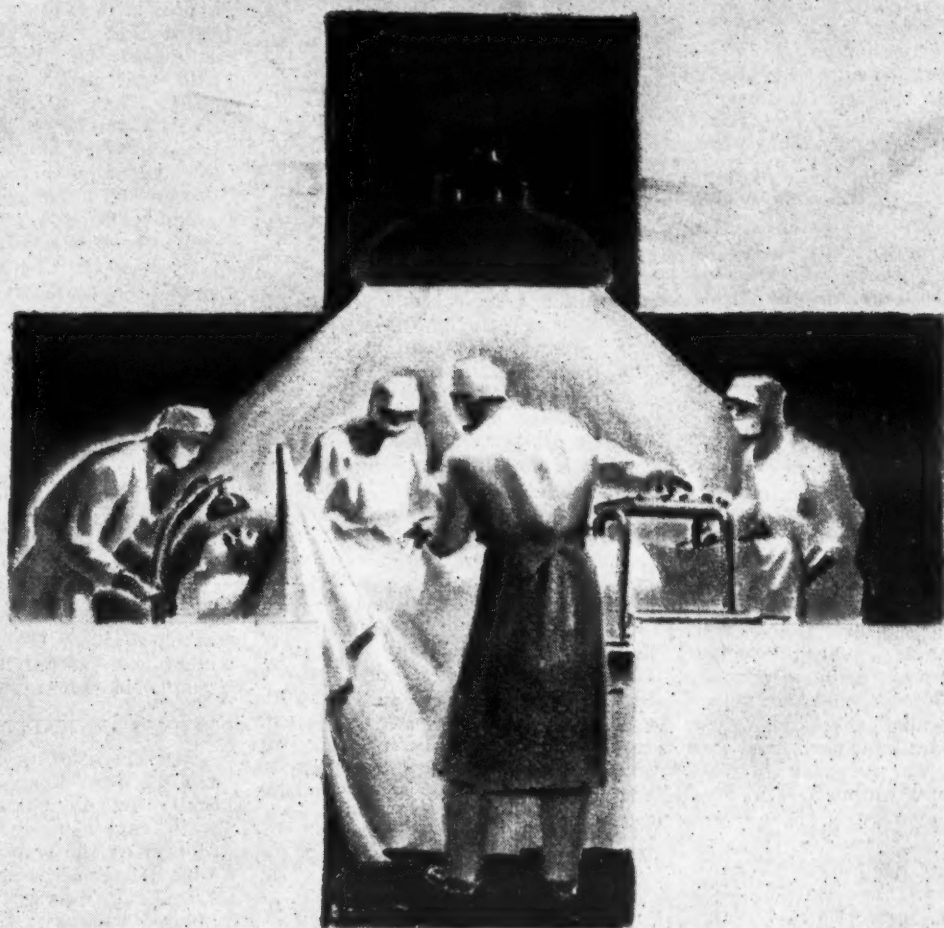
NOW AVAILABLE AT PHILCO SEVERAL EXCEPTIONALLY CHOICE POSITIONS FOR REFRIGERATION DESIGN DRAFTSMEN AND ENGINEERS

To several top creative draftsmen and engineers in the refrigeration design field, this message is directed. In every way, these positions are worthy of the best talents this industry affords. They are permanent. They are loaded with opportunity for accomplishment and advancement with the organization which marked up the most spectacular rise in the entire refrigeration field, in the years just before the war. For background, you will probably have a science degree, or comparable experience. You doubtless have been working on refrigeration or air conditioning design projects for five years or more. You are proud of what you have done, and can tell us about it. Write us in detail as to your experience, education, family and draft status, and salary. Your letter will be treated in strict confidence.

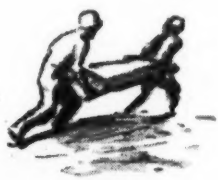
Employment subject to W. M. C. rules

Write to Wm. G. Ulmer, Jr.

**PHILCO CORPORATION
PHILADELPHIA 34, PENNA.**



A Fight for Life



Working tirelessly, day and night to save the lives of our wounded soldiers and sailors, stand the Army and Navy doctors and hospital attendants. To aid the wounded and maimed in their fight for life, and to help doctors and nurses withstand the terrific strain of their arduous duties; operating, X-Ray and recovery rooms on land and sea are kept comfortable with air conditioning. Refrigeration stands guard over vital serums, perishable medicines, and blood. Refrigeration also plays a vital part in the manufacture of penicillin and sulfa drugs, in the preparation of plasma and serums—in many other

processes essential to the healing art. Without these many aids, no amount of effort and devotion to duty would save so many of our fighting men.

Many thousands of Detroit Expansion Valves, Solenoid Valves, Controls and Contact Makers are in use in this life-giving service.

The reputation gained by Detroit refrigeration equipment in peacetime is being heightened by its performance in time of war.

The reliability of "Detroit" and "DL" Refrigeration Products assures the best possible results from refrigeration and air conditioning. If you have need for refrigeration equipment, specify "Detroit" for unfailing performance.

DETROIT LUBRICATOR COMPANY



General Offices: DETROIT 8, MICHIGAN

Division of AMERICAN RADIATOR & Standard Sanitary CORPORATION

Canadian Representatives — RAILWAY AND ENGINEERING SPECIALTIES LIMITED, MONTREAL, TORONTO, WINNIPEG

"DL" Heating and Refrigeration Controls • Engine Safety Controls • Safety Float Valves and Oil Burner Accessories • Radiator Valves and Balancing Fittings • Arco-Detroit Air and Vent Valves • "Detroit" Expansion Valves and Refrigeration Accessories • Air Filters • Stationary and Locomotive Lubricators.

Grunow Authorized Service Declares Carrene Is Available For Servicing Jobs

CHICAGO — Grunow Authorized Service, Inc., here, answering the protest by the Arizona Refrigeration Association, reported in the June 19 issue of AIR CONDITIONING & REFRIGERATION NEWS, that Carrene refrigerant was not available without an AA-1 priority, states that Carrene No. 1 is, and has always been available to the refrigeration trade, without any priority restrictions whatsoever.

Grunow Authorized Service, Inc., is manufacturer and supplier of repair service and replacement parts, and exclusive distributor of Carrene No. 1 for Grunow household refrigerators.

A company official has emphatically denied that any priority is required for Carrene No. 1. He stated that J. E. Oertel and F. M. Mitchell, of the Consumers Durable Goods Branch, and Gilbert May, of the Wholesale and Retail Trades Division of the WPB, Washington, D. C.,

have cooperated with Grunow Authorized Service, Inc., to the fullest extent in assuring the availability of adequate materials with which to maintain repair service and adequate supplies of refrigerants and replacement parts for this make of refrigerator.

The company official added that his firm, like every other concern, has been greatly hampered in its efforts to maintain sufficient stocks of merchandise, due to the restrictions placed on critical materials vital to the successful prosecution of the war effort.

However, he wants to go on record as assuring the refrigeration service industry that replacement parts and the refrigerant known as Carrene No. 1 are available to the trade without priorities and can be obtained through Grunow or its authorized distributors throughout the country.

Production Quotas Set on Hot Water Storage Tanks

WASHINGTON, D. C.—Production quotas for range boilers, expansion tanks, and hot water storage tanks have been set for the period from June 2, 1944, through Dec. 31, 1944, the War Production Board said June 21.

Limitation Order L-199, Plumbing and Heating Tanks, as amended June 2, 1944, provided for production of such equipment during any calendar year, but no provision was made for the period between June 2 and Dec.

31, 1944, WPB officials explained.

The newly revised order provides that production for the seven-month period from June 2 to Dec. 31, 1944, shall be 7/12 of the quota provided for each calendar year. Each manufacturer's calendar year production of range boilers and expansion tanks is limited to 70% of his unit output during 1941, while production of hot water storage tanks is permitted each manufacturer at the rate of 75% of his 1941 unit output.

Phil Harrison Co. Plans Postwar Distributor Setup

NEWARK, N. J.—Philip H. Harrison & Co., New Jersey distributor of electrical home appliances and commercial refrigeration, will return to this field when production of these devices is resumed, it is announced by Philip H. Harrison, president.

For nearly 20 years the company distributed the General Electric line of appliances, and was one of the oldest distributors of this brand, having been among the first to receive a franchise.

Up to the outbreak of the war, when manufacture was suspended, the company had marketed a total of nearly 150,000 appliances in northern New Jersey. The company has been one of New Jersey's leading advertisers, according to Harrison, spending a total in excess of a million dollars, chiefly in newspapers, both directly and through dealers.

Harrison has bought out other stockholders and installed his department heads as directors, namely: William H. McGoughran, Thomas E. Babson, John Eick, Jr., Otto W. Nelson, John L. Mahoney, John H. Stubbs, and Alfred B. Pursell. A "junior board" has been elected by the employees and has presented to management the suggestions and problems of the personnel.

"That all should know and believe in the merchandise they sold," states Harrison, "every selling employee learned to wash and iron clothes, and to cook meals and wash dishes electrically, and all of us, including myself, learned from first-hand experience every phase of merchandising."

Here Are Some Points To Check In Applying For Rating on 1319

For Replacement, System Must Show Need Of Much Service; Expansion Need Must Be Proved

DETROIT — The amendment to Order L-38 which prescribes that most of the applications for WPB-approved orders of commercial refrigeration and air conditioning equipment be filed on Form WPB-1319 and processed by WPB field offices, has been in effect for a month, and some helpful hints on procedures by distributors and dealers can now be given with some degree of confidence.

Applications for refrigeration equipment for such permitted uses as are given on List C of Order L-38 should be filed on Form WPB-1319 except those eight applications specifically designated in the order, or except applications where construction is involved in excess of \$5,000, in which case the form to use is WPB-617.

It is possible to replace existing equipment of the type designated on List "C" where the system has passed the "normal life expectancy mark" (any system over 10 years of age would probably qualify). If it can be shown that the equipment continually needs service work which takes a lot of the scarce repairman manpower it might stand a good chance of replacement.

FOR EXISTING JOBS

For an existing installation to be eligible for expansion it must generally be demonstrated that some such factor as a population shift caused by the war effort, or the fact that deliveries of perishables are less frequent, making bigger storage space necessary, has made it necessary for a larger system to be installed.

The field priority specialists, it is said, are on the lookout for applications in which more equipment would

be ordered than was necessary to do the job; as, for example, a food store or restaurant that couldn't possibly dispense the amount of foodstuff that the refrigeration system would be called upon to preserve. They are also said to be on the lookout for any applications for equipment that might be used for hoarding foods.

There are two generally accepted points about the interpretation of L-38 which should be of interest to the field. Where the cost of unitary type of equipment is \$500 or less and the installation is to be used for the storage of perishables, approval is just about automatic because CMP No. 5 permits this as a "minor capital addition."

For the construction of any "insulated enclosure" for refrigeration purposes an approved order must be obtained.

BE FRANK WITH WPB

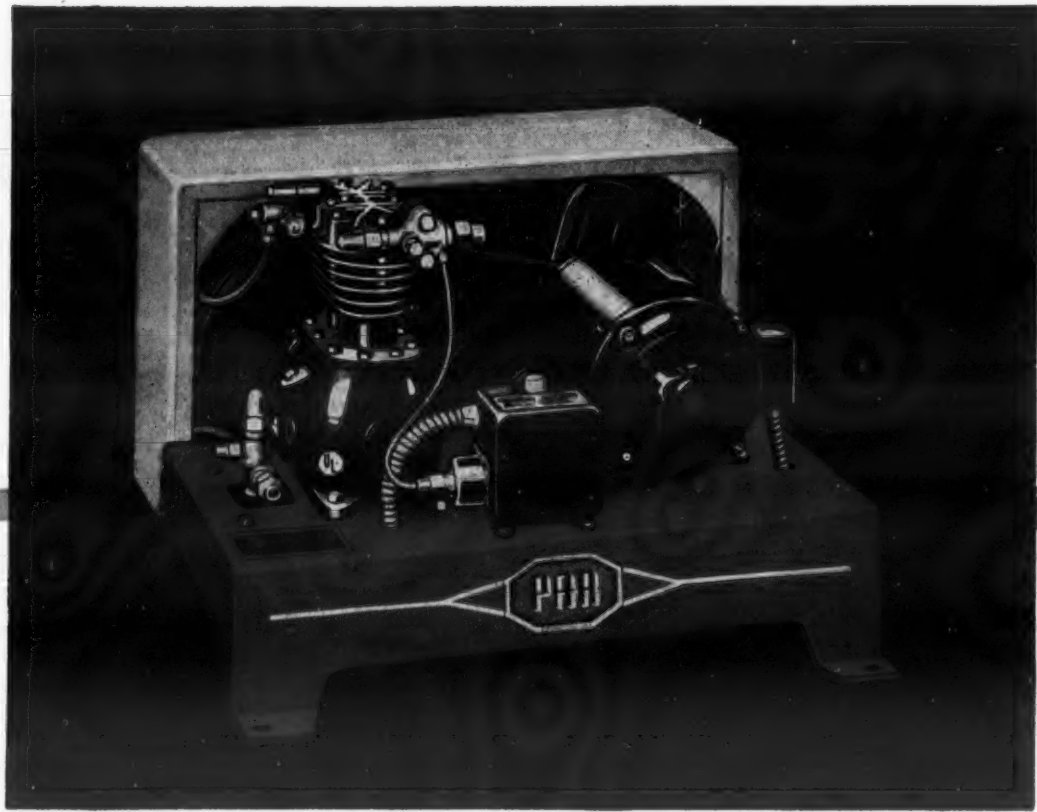
"Complete frankness" with the WPB field offices is urged. In this regard E. E. Barbee, St. Louis branch manager for McCray Refrigerator Co., has the following to say:

"We have definitely decided here that in making up priority applications we shall work closely with the merchant, be very frank with all concerned, and have the merchant give the story complete in all respects when making out his application, so that if called upon, the merchant will know just what the correct story is. "This will help us establish a reputation with the board for being reliable and dependable both with the customer and them."

One important advantage of the field processing is that if the application is turned down, the customer and the refrigeration dealer can call upon the WPB office in person if they feel that their application deserves further consideration.

All-Refrigerator Ships Underway in Mobile

MOBILE, Ala.—Six all-refrigerator ships are being erected in Mobile by the Gulf Shipbuilding Corp. The first one, named The Fra Berlanga, has already been launched. The line for which the ships are being built is a subsidiary of the United Fruit Co.



Par Model HA-3

- A husky $\frac{1}{3}$ H.P. 2 cylinder air cooled unit designed for commercial display cases and large reach-ins.
- Embodies the 28 outstanding PAR features, including large condenser . . . slow speed . . . and fast pump down.
- Equally efficient for self contained or remote applications. Standard equipment includes controls.

● Write for illustrated brochure of details.

● BY COMPARISON—YOU'LL BUY PAR.

PAR Division

LYNCH

MANUFACTURING
CORPORATION
Defiance, Ohio, U.S.A.

REFRIGERATION ACCESSORIES

- Instantaneous Water and Beverage Coolers.
- Oil Separators.
- Two-Temperature Valves.
- Accumulator Heat Exchangers.
- Equalizer Tanks.
- Controlled Temperature Photographic Processing Units.
- X-Ray Refrigerating Units.

TEMPRITE PRODUCTS CORPORATION

47 PIQUETTE AVENUE DETROIT 2, MICHIGAN

VIRGINIA Refrigerants



TESTED
PURITY
for
SERVICE
SURETY

"EXTRA DRY ESOTOO", "V-METH-1" AND METHYLENE CHLORIDE

AGENTS FOR KINETIC'S "FREON-12"—AND "FREON-22"

VIRGINIA SMELTING CO.

WEST NORFOLK, VIRGINIA

72 Beaver St., New York 5

131 State St., Boston 4

Inside Dope

By George F. Taubeneck

(Concluded from Page 1, Column 1)

yard. We didn't notice it until we began getting telephone calls from interested prospects; after which we put the sign back where it belonged.

Shortly thereafter the writer was standing in the bus-loading zone near our house when a quite elderly gentleman came along in an almost equally elderly Cadillac and picked me up. He was telling me that after 11 years of retirement he had returned to the "real estate game" and had taken a new lease on life (pun intended).

"What prompted me to return to the business," he said, "was that white modern house on the corner back there." (He referred to my home.) "A For Sale sign went up there not long ago, and within two days it had been sold. I decided that if turnover was that rapid I'd better get back in the business."

People Are Funny

Another neighbor of ours moved to the country. Before doing so, she advertised a few items of furniture in the want-ad section of a newspaper. Many calls came, and the furniture was quickly sold, but two odd reactions turned up:

On lady 'phoned, saying that she had read the advertisement, and asked for complete measurements of one of the chairs. The owner got out a tape measure and gave her the data. Next the 'phoner wanted exact description of the material. That was given. Then came this over the 'phone:

"Well you gotta nerve. I sold a chair just like that for only \$55, and here you are asking \$85." And then she hung up.

Shortly thereafter another woman called and said:

"I know you'll have more callers than you need to sell that furniture, so will you please give me the names and addresses of those to whom you don't sell? I've got some furniture I want to dispose of, too."

Automatic Reflex

Our good friend, H. C. L. Jackson, tells an amusing wartime story, too. It seems he got on the elevator at the top floor of a 30-story building. He was the only occupant. Running the elevator was a little bobby-soxer, obviously new not only to that job, but to any job.

On the 28th floor the elevator stopped, and aboard stepped a truly magnificent young woman, dripping in luxurious silver foxes, expensively gowned, gloved, and shod, and wearing a quite regal air to match all her elegant trappings. She appeared to be headed for a fashionable tea.

As they descended, the little elevator operator gazed in considerable awe at the daughter-of-the-rich. But the regal young lady didn't so much as notice the elevator operator.

On the 14th floor the elevator stopped again. Nobody was in sight,

but down the marble corridor one could hear rapidly approaching footsteps, and from that direction a man's voice called out: "Down?"

Automatically, the expensively-dressed passenger answered: "Down."

For the rest of the ride, her face was a study in scarlet.

'Time' Predicts

In the June 24 issue of "Time" there is reported the following encomium on the future of frozen foods:

"Last year Americans ate nearly a billion pounds of commercially frozen foods. About a half-billion more pounds were stored in 5,000 cold-locker plants by some 1,500,000

U. S. families. The quick-freezing boom, barely 15 years old, is growing fast. Last week a propagandist who has contributed to the boom, magazine Writer Boyden Sparkes, published a book predicting that the next big move will be toward freezing and storage in the home (Zero Storage in Your Home; Doubleday, Doran; \$2.50).

"Many food technologists believe that after the war quick freezing will supplant canning and dehydration as the chief method of food preservation. To Zealot Sparkes, such speculation is overcautious. He asserts that food freezing may revolutionize the U. S. standard of living. City people will buy their food wholesale. People 'in modest circumstances,' Sparkes glows, 'may eat cheaply such meals as heretofore were available only to rich gourmets.' Farm families will have an easily preserved, tasty winter supply of their own produce—including much that they now waste of summer's abundance.

"Author Sparkes has a 26-cubic-foot freezer on his North Carolina farm, keeps it stuffed with whole

lamb carcasses, chickens, cream, sweet corn, grapes, strawberries, quail, pigeons—all of which his family can eat fresh the year 'round. He also keeps in touch with other members of the small but fanatical cult of U. S. citizens who own home freezers. Their exploits are reverently recorded in his book. The Fyler family, of West Simsbury, Conn., reports that its freezer saves it \$1,000 a year. A Mrs. Spencer of Pueblo, Colo., whom Sparkes salutes as a "distinguished pioneer," gives an awesome account of freezing 2,000 quarts of food annually, from soups to shortcake.

"The first quick-freezing process was patented by Inventor Clarence Birdseye of Gloucester, Mass. in 1925. Food is frozen at 10 to 20 degrees (Fahrenheit) below zero, stored at zero or below. It keeps its flavor, vitamins, color, and tastes as fresh when taken out of storage (after a year or two in some cases) as when it was put in. Freezing is less trouble than canning or dehydrating. The food is blanched in boiling water or steam, then wrapped in a moisture-proof, vapor-proof container

and sealed with a warm iron. (Fruits are packed in sugar syrup to prevent oxidation.)

"Home freezing machines range from four to 35 cubic feet. So great is the demand for them (manufacture has been suspended during the war) that soda-fountain ice-cream cabinets worth \$25 as scrap have been refurbished and sold for as much as \$800. A family locker in a storage plant usually holds about 200 lbs. of food, rents for an average of \$12 a year. Capacity of a 26-cu.-ft. home freezer: about 1,000 lbs.

"The chief disadvantage of home freezing has been the high cost of the freezer. Though relatively inexpensive to run (\$2 to \$3 a month), freezers range in price from \$300 to \$1,000. They are also inconvenient because food packages piled up in the box are hard to get at. Moreover, an electric power failure may ruin the whole batch of food.

"But Sparkes reports that manufacturers expect all these drawbacks to be overcome by technological improvement and mass production after the war. Some hope to produce a good-sized freezer for less than \$200."

AMCOIL FOOD CONDITIONER

NEW COOLING-PLUS UNIT

Adds High, Controlled Humidity

Amcoil Headliner Steps Up Your Sales

Here's something new, different—a practical combination of high, controlled humidities with cool temperatures in a good preserving unit with great commercial possibilities. The recently-announced Food Conditioner spearheads a line of Amcoil-engineered products designed and built to advance refrigeration standards and make sales history.

More than a unit cooler, it combines Cooling Temperatures of 35° to 40° F. and high, controlled humidities up to 85%. Built to be used in Walk-In Boxes. The double job done by this compact packaged refrigeration system preserves and saves foods without dehydration. It's engineered to protect stored fresh meats, fruits and vegetables, perishable foods, butter and cheese, eggs, flowers, bakers' and confectioners' products—and to retard dough.



THESE TWO COMPANION ITEMS ROUND OUT THE PICTURE OF OPPORTUNITY NOW



AMCOIL ALSERVICE OPENFACE COOLING UNIT, a standard type forced draft cooling unit. Modern streamline design and in attractive colors, grey and black, it produces temperatures down to 34° F.



AMCOIL ALSERVICE DOWN DRAFT COOLING UNIT, a new type of cooling unit employing some new principles of refrigeration developed by Amcoil Engineers. Convertible to Food Conditioner unit by addition of parts if need for humidity control arises in the future. Temperatures down to 34° F.

As replacement equipment on rated orders of AA5 or better under L-38, these Amcoil units can be delivered now. WPB Task Committee figures indicate that 1944 sales of commercial refrigeration equipment for replacement will exceed \$100,000,000 in retail sales value. Get your share of this business with Amcoil-engineered units, embodying the combined technical skill and experience gained in the making of cabinets for testing war products under varying humidities and temperatures from -100° to +160° F.



AMERICAN COILS CO.

25-27 LEXINGTON STREET • NEWARK, N. J.

Factory Representatives

P. J. Burrill • 800 North Clark St., Chicago, Ill.

Franklin G. Slagel • 1501-1509 W. 8th St., Los Angeles, Calif.

MASTERCRAFT ADJUSTABLE PAD AND CARRYING HARNESS

Endorsed by *Howards*

Used and endorsed by thousands of refrigerator dealers in the United States and Canada. Pad is adjustable to all makes and sizes of refrigerator cabinets; thoroughly protects finish of cabinet from scratches and marks during moving; easily and quickly put on or off; sturdy, lasting construction; easily pays for itself in a short time. Price \$11.75 each.

Attractive lettering of your name on pad at \$2.00 each extra. Harness is a separate unit from the pad, is adjustable, and provides a simple and convenient arrangement for carrying your refrigerator more safely and easily. Price \$8.50 each.

Write for complete folder and prices on pads for refrigerators, washers, ironers, ranges, radios; also furniture pads and protective covers. All prices subject to change without notice.

BEARSE MANUFACTURING CO.

3815-3825 Cortland Street, Chicago 47, Illinois

ORDER NOW FOR IMMEDIATE SHIPMENT FROM YOUR LOCAL JOBBER OR DIRECT FROM US

Gundell Leaves G-E For Job With Post



GLENN GUNDELL

BRIDGEPORT, Conn.—Glenn Gundell has resigned as advertising manager of the Appliance and Merchandising department of General Electric Co. here to join the executive staff of the "Saturday Evening Post."

Mr. Gundell will be promotion manager of the "Saturday Evening Post," according to an announcement from that publication.

Admiral Announces Features of Its Postwar Electric Refrigerator Model

CHICAGO—Admiral Corp. became the first of the "new" manufacturers of mechanical refrigerators to give some idea of its product plans with the announcement last week that it will offer a refrigerator with a built-in "freezer" compartment that will have room for the storage of two bushels of frozen foods.

The refrigeration system used in the Admiral models will be an application of the two-temperature system that was used in the Stewart-Warner models. The separate "freezer" compartment will hold temperatures of 0° to 10° F., and according to an artist's drawing of the refrigerator which the company has released (see illustration on this page), it will be located in the bottom part of the cabinet interior.

There will be no evaporator as such within the remaining part of the cabinet interior, which Admiral will promote as a "purified, moist cold compartment for the storing of regular foods."

"By building the cold-producing coils over a large flat area, Admiral engineers found that it was possible to maintain a high degree of humidity," says the announcement, and

it is further pointed out that no defrosting is necessary.

"The top and back panels of the Admiral moist compartment are chilled to the right degree of coldness so that the refrigerator maintains a high degree of humidity as evidenced by the tiny beads of moisture which collect on the surface of the food liner," the announcement continues.

Another feature of the postwar Admiral refrigerator will be the "Sterilamp," whose ultra-violet rays destroy bacteria on exposed food surfaces and in the surrounding air. Other claims made for the Sterilamp is that it retards mold growth and reduces spoilage as well as eliminating odors.

Admiral will offer a number of models in several sizes of this two-temperature type refrigerator, according to the announcement.

First Electric Irons To Dealers By September

WASHINGTON, D. C.—It will be September before the first electric irons manufactured under the 1944 electric iron program approved by WPB will reach retail stores, it was indicated recently by WPB.

Production quotas for 201,000 electric irons, bringing total authorizations to produce irons to beyond 75% of the 2 million quota were announced by WPB.

What One Postwar Refrigerator Will Be Like



This artist's conception of the Admiral refrigerator shows the "two bushel" freezer compartment along the bottom, with the ice cube trays apparently at the far left. Note absence of any evaporator; the top and back panels of the liner will be chilled instead.

IN PT BOATS

FLEXIBILITY IS ESSENTIAL

In Cold Plates it's important, too!

● This flexibility is the reason for the rapidly growing demand for STANGARD Prime Surface Cold Plates. High refrigerating efficiency (*higher than any other type of plate because of its prime surface**) . . . great structural strength, light weight, ease of installation, and low cost, are but a few of the reasons why STANGARD Prime Surface Cold Plates are continually specified for—

LOCKER PLANTS • DISPLAY CASES • FOOD COUNTERS
SODA FOUNTAINS • TRUCKS • LIQUID COOLERS
BLOOD PLASMA CABINETS • ICE CREAM CABINETS
FARM MILK COOLERS • FARM FREEZE CABINETS
FROSTED FOOD REFRIGERATORS
BEVERAGE COOLERS • RIVET CHILLERS
LOW TEMPERATURE TEST ROOMS

* No intermediate factor between refrigerant and contact surface.



STANGARD-DICKERSON CORP.

46-76 OLIVER STREET

NEWARK, NEW JERSEY

IN MEN'S CLOTHING...



WELL DISPLAYED
MERCHANDISE IS

Half-Sold!

MAKE YOUR CASES SELL WITH

Thermopane

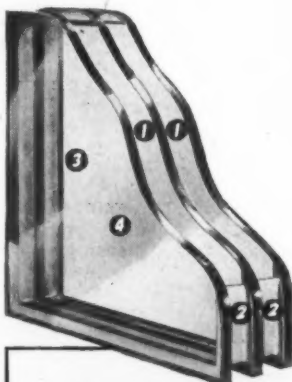
THE INSULATING GLASS
with the
BONDERMETIC SEAL

What provisions have you made in your postwar frozen food and refrigerated display cases to make selling easier for your clients? Before the war, "Blind Top" cases were rapidly being superseded by glass-top cases that let the customer see what he wanted to buy.

You can get this assured "Eye Appeal" for your postwar cases now—by equipping them with THERMOPANE—the patented, factory-built insulating glass unit being offered to the refrigeration industry by Libbey-Owens-Ford. THERMOPANE is easily installed . . . comes to you as a unit, ready for installation. It assures

Clear Vision—lets the customer see what he wants to buy. The dry air is sealed in with the patented metal-to-glass bond to prevent condensation under normal conditions. This Bondermetic Seal is used to prevent infiltration of dust and dirt between the panes of glass. And there are only two surfaces to clean.

In planning your postwar cases, be sure to get the extra sales advantages of L-O-F THERMOPANE. See your Glass Distributor or write Libbey-Owens-Ford Glass Company, 6074-A Nicholas Building, Toledo 3, Ohio.



4 IMPORTANT THERMOPANE FEATURES

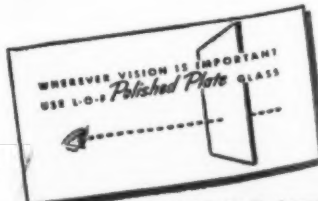
- 1 **INSULATING AIR SPACE.** The layer of air inside the Thermopane unit is scientifically cleaned, dried and hermetically sealed at the factory. This sealed-in air gives Thermopane its high insulating efficiency.
- 2 **BONDERMETIC SEAL.** This patented, weatherproof, metal-to-glass seal bonds the two panes of glass into one unit to prevent dirt and moisture from entering the air space.
- 3 **CLEAR VISION.** The dry air is sealed in with the patented bond to prevent frost or condensation from forming on the inner surfaces of the panes of glass.
- 4 **ONLY TWO SURFACES TO CLEAN.** The glass surfaces inside a unit are specially cleaned at the factory . . . and stay clean.

Copyright 1944, Libbey-Owens-Ford Glass Co.



LIBBEY-OWENS-FORD

a Great Name in GLASS



Trade Mark Registered

WPB Gives Data on Demand and Supply Situation of Consumers' Durable Goods

Both Household and Commercial Refrigeration Units Are Badly Needed, But They Aren't on Schedule

WASHINGTON, D. C.—Civilians would quickly buy the 1,226,250 mechanical refrigerators that manufacturers—if they were so permitted—could produce in the third quarter of 1944, and at least 12,500 such refrigerators are needed to meet the barest minimum requirements, but no production whatever is scheduled for the third quarter.

That's the situation on household mechanical refrigerators, as outlined in a letter from William Y. Elliott, Vice Chairman of WPB for Civilian Requirements, to Donald M. Nelson, WPB chairman. With a letter was a list of tables showing quantities of essential goods needed by the civilian economy, and it was these tables which Mr. Nelson gave the Truman Committee when he appeared before it June 19.

"Requests received by WPB re-

gional directors from manufacturers who seek authorization to produce civilian goods after restrictions on materials are released will be checked against these lists in order that the more essential needs of the civilian economy may be met first," said the WPB announcement accompanying the release of the lists.

REFRIGERATORS TOP LIST

Of some significance, perhaps, is the fact that mechanical refrigerators topped the list of Table I ("most serious shortages"). Also on this list are various types of commercial refrigeration equipment, water coolers, and evaporative coolers.

In his letter to Chairman Nelson explaining the tables Vice Chairman Elliott said:

"I am attaching hereto a summary list of the more important hard goods programs of the Office of Civilian Requirements showing name of item, amount estimated to be produced during the third quarter, and amounts required stated at three different levels assuming construction activity at present levels.

"Level I represents minimum essential requirements, assuming controlled distribution through rationing or some similar system so that products actually get to those specific people or uses for which we programmed them.

"Level II might be called a 'squeeze' level; it represents minimum essential requirements, assuming no control on distribution; in other words, a short supply on the market but sufficient so that people can find the products they want if they shop around enough.

"Level III means an unrestricted supply of products, in terms of quality products in unrestricted lines. We say 'unrestricted supply' instead of 'unrestricted demand' because although we estimate what unrestricted demand would be, we try to be practical and qualify that figure by the probable production of the industry."

The adjoining three tables are not complete, but give the figures on products in which readers of AIR CONDITIONING & REFRIGERATION NEWS might be interested.

Tables Show Serious Shortages in Many Appliances; Little Production Scheduled

Table I—Summary of Essential Civilian Durable Goods Programmed for Production—Most Serious Shortages—

Code No.	Product	Unit of Measure	Level 3	Level 2	Level 1	Production (Estimated) 3rd Quarter
112	Mechanical Refrigerators	Unit	1,226,250	250,000	12,500	0
114	Vacuum Cleaners, Domestic	Unit	648,425	125,000	0	0
425	Electric Ranges	Unit	261,000	75,000	33,294	11,375
426	Space Heaters, Electric	Unit	125,000	37,500	0	0
428	Commercial Appliances, Electric	Unit	1,755,000	0	702,000	400,000
427	Net Cooking or Heating	Unit	700,000	234,370	10,000	10,000
429	Farm Radio Batteries	Cells (000)	121,600	91,200	0	45,000
476	Washing Machines	Unit	725,000	350,000	225,000	0
478	Ironing Machines	Unit	82,500	42,000	0	0
511	Vacuum Tubes	Unit	16,500,000	10,000,000	4,500,000	4,500,000
531	Refrigeration, Air Conditioning, Etc.	Unit	19,000	0	9,000	0
532	Water Coolers	Unit	2,760	0	920	0
533	Walk-In Coolers	Unit	100,000	0	35,000	0
534	Evaporative Coolers	Unit	4,020	0	1,340	0
535	Dairy Refrigerators	Unit	22,800	0	7,600	0
536	Display Cases	Unit	1,800	0	600	0
537	Dough Retarders	Unit	8,500	0	2,850	0
538	Reach-In Coolers	Unit	35,000	35,000	0	11,500
539	Gas Hot Plates	Unit	123,000	110,000	0	50,000
541	Oil Ranges	Unit	40,000	30,000	0	12,000
542	Coal and Wood Stoves (Sheet Metal)	Unit	210,000	100,000	30,000	40,000
543	With Grates, Etc.	Unit	5,637	2,750	0	0
544	Fuel Oil Stoves, Portable	Unit	69,145	30,942	12,335	0
545	Oil-Fired Floor Furnaces	Unit	75,000	37,500	0	0
546	Class B Oil Burners	Unit	45,000	30,000	12,500	6,500
547	Class B Stokers	Unit	0	0	0	0
548	Electric Water Heaters	Unit	0	0	0	0

Table II—Summary of Essential Civilian Durable Goods Programmed for Production—Serious Shortages—

Code No.	Product	Unit of Measure	Level 3	Level 2	Level 1	Production (Estimated) 3rd Quarter
424	Commercial Cooking and Heating Appliances, Electric	Unit	690,000	0	276,000	150,000
424	Commercial Dishwashers	Unit	0	0	1,604	1,604
530	Ice Refrigerators	Unit	150,000	150,000	0	100,000
531	Gas Ranges and Cook Stoves	Unit	483,000	250,000	125,000	170,000
532	Coal and Wood Ranges and Cook Stoves	Unit	150,000	150,000	100,000	100,000
533	Oil Cook Stoves	Unit	82,000	70,000	0	35,000
534	Oil Table Stoves	Unit	88,000	57,000	0	50,000
535	Combination Ranges	Unit	46,900	25,000	5,000	23,000
536	Portable and Drum Ovens	Unit	138,000	125,000	75,000	120,000
537	Commercial Cooking Equipment, Non-Electric	Unit	0	0	15,803	15,823
538	Food Serving and Preparation Fixtures and Equipment	Unit	0	1,500,000	0	0
539	Gas Radiant and Bathroom Heaters	Unit	247,000	125,000	105,000	100,000
540	Gas Circulating Heaters	Unit	124,000	65,000	20,000	52,000
541	Gas Floor Furnaces	Unit	47,500	20,000	7,500	10,000
542	Schoolroom Stoves	Unit	400	300	0	160
543	Laundry Stoves	Unit	28,000	28,000	28,000	26,000
544	Fuel Oil Stoves, Other Than Portable	Unit	105,000	50,000	5,000	40,000
545	Warm Air Distribution Equipment	Unit	25,000	18,000	11,000	13,530
546	Furnaces, Warm Air (Cast Iron and Steel)	Unit	55,000	55,000	40,000	42,000
547	Class A Stokers	Unit	6,550	6,550	6,550	4,849
548	Low Pressure Steam and Hot Water Heating Specialties	Unit	2,947	2,947	2,947	2,326
549	Gas Sidearm Water Heaters	Unit	75,000	75,000	75,000	71,000
550	Underfired Water Heaters	Unit	165,000	165,000	165,000	156,000
551	Coal-Fired Water Heaters	Unit	96,000	96,000	96,000	91,000
552	Indirect Water Heaters	Unit	25,000	25,000	25,000	23,700

Table III—Summary of Essential Civilian Goods Programmed for Production—Other Products—

Code No.	Product	Unit of Measure	Level 3	Level 2	Level 1	Production (Estimated) 3rd Quarter
401	Motors: Electric	Unit	0	0	150,000	150,000
402	Fractional Hp. Motors, Replacement	Unit	3,575,000	2,150,000	0	2,150,000
403	Appliance Cords	Unit	6,325,000	2,220,000	0	2,220,000
404	Extension Cords	Unit	1,625,000	500,000	0	700,000
405	Flat Irons, Electric	Unit	140,000	120,000	0	200,000
406	Coal and Wood Stoves (Sheet Metal) Without Grates, Etc.	Unit	2,675	3,675	3,675	3,675

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is the **LENK HALIDE LEAK DETECTOR**



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Lenk Halide Leak Detector features flame control, shut-off valve, self-cleaning orifice, non-clogging burner.

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with frozen food cabinets and refrigerators to serve this new demand

Yes, when the "green light" is given, Philco will be ready with products that reflect its forward thinking before the war, that fulfill the new frozen storage demands of the modern kitchen and that give Philco dealers the biggest sales opportunities on the market in supplying this new demand.



Philco was first to introduce a complete line of refrigerators with full-size, separate compartments for Frozen Foods and Frozen Storage.

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Agents for Kinetics "FREON-12"

AC-3-44

Year-Around 'Heat Pump' Conditioning Systems Win Ohio Utility's Approval

Refrigeration Units Take Heat From Air and Water to Heat 2 Offices

GRAND RAPIDS, Mich.—Properly engineered and installed, the "heat pump" is a wholly practical device to furnish year-around all-electric air conditioning service, declared E. R. Ambrose of American Gas & Electric Service Corp., New York City, at the semi-annual meeting of the American Society of Heating & Ventilating Engineers held at the Pantlind hotel here recently.

Presenting a paper entitled "Description and Performance of Two Heat Pump Air Conditioning Systems," prepared by himself and Philip Sporn, vice president of the service company, Mr. Ambrose discussed heat pump installations in two branch office buildings of the Ohio Power Co., a subsidiary of the American Gas & Electric Co.

The utility offices discussed are located at Portsmouth and Coshocton, Ohio, and were both constructed in 1940. The buildings differ somewhat in construction and in the source of heat supply for winter operation of the air conditioning systems. The Portsmouth system depends upon outside air for its heat source during winter, while the Coshocton system uses well water.

Coshocton office building has two stories and a basement and is 88 ft. long by 55 ft. wide by 35 ft. high.

The office at Portsmouth has four stories and is 104 ft. long by 45 ft. wide by 45½ ft. high. Because the latter building is located in a flood area, no basement was provided. Equipment usually installed in the basement—air conditioning room, transformer vault, telephone switching room, and general storage vault—is found on the fourth floor of the Portsmouth office.

To select design temperature limits "the climatological data as published by the U. S. Department of Agriculture, was studied for a five-year period to determine the minimum and maximum temperature which would be encountered during the heating and cooling seasons at the two locations," explained Mr. Ambrose.

"Based on this study—5° F. and 0° F. were selected as the probable average minimum outdoor temperatures which would be encountered during the heating cycle at Coshocton and Portsmouth, respectively, and 95° F. dry bulb and 75° F. wet bulb as the average maximum temperature encountered during the cooling cycle.

DESIGN CONDITIONS

"For both systems an inside temperature of 72° F. and 30% relative humidity was selected for the heating season and 78° F. and 50% relative humidity during the cooling season," he added.

Heat gain and loss calculations for the Coshocton system were about equal—404,700 B.t.u. per hour heat gain and 409,700 B.t.u. per hour heat loss. At Portsmouth heat gain was calculated at 450,000 B.t.u. per hour, and heat loss 354,700 B.t.u. per hour.

"After the heat gain and heat loss calculations are made, consideration can be given to the economical selection of the equipment," said Mr. Ambrose. "Usually the best method is to base the sizing of the compressors, coils, and other equipment on the heat gain, and using this selection to determine the heat output at various outdoor temperatures.

"Following this procedure, the resulting heat output will be found to be sufficient to satisfy the heat loss for most installations. This was the

case in Coshocton, where the temperature of the heat source is constant (well water) and independent of the outdoor temperature, thus allowing the refrigerating compressors to operate at approximately the same suction pressure during both the heating and cooling cycle.

"However, this is not the case in an air system such as Portsmouth's. Here, as the outdoor temperature drops, the suction pressure of the compressors is lowered, resulting in a proportional reduction in capacity. This necessitates, in most cases, an auxiliary heat source or some form of booster heaters during the lower outdoor temperatures."

For the Coshocton building the mechanical refrigeration system was not sized to remove the entire heat gain, for the output during the heating cycle would have greatly exceeded the requirements for the coldest day, pointed out Mr. Ambrose. Instead a well water precooling coil was installed to absorb 120,000 B.t.u. per hour, thus reducing the size of the mechanical refrigeration equipment by 10 tons and still meeting the cooling requirements.

HEATER NEVER USED

This reduction in cooling equipment brought the heating capacity slightly below requirements for the coldest days, so a 15 kw. electric heater was added to the system to act as a booster if needed. According to Mr. Ambrose, during three years of operation the auxiliary heating unit in the Coshocton system has not been used, the heat pump supplying all the necessary heat.

For the system at Portsmouth, the equipment selected on the basis of heat gain requirements was found to have sufficient capacity to meet the heating requirement when the outdoor temperature was 20° F. or above. For outdoor temperatures below 20° F. city water is used as the heat source.

"A 'blow through' type conditioning unit was employed on both the Coshocton and Portsmouth systems. In this design the air circulating fan delivers the outside-recirculated air mixture through the filters, then over the heating and/or cooling coils into one of two plenums. The zone thermostats, by controlling the operation of the two dampers, regulate the amount of air flowing from each of the two chambers into the zone supply duct."

UNIT AT COSHOCTON

For the Coshocton building the conditioning unit consists of a heating coil and humidifier in one plenum and a well water precooling coil and a mechanical refrigeration coil in the other. Due to the possibility of having a large crowd of people in the auditorium, an additional dehumidifying coil was installed in the supply duct to this zone to handle the high latent heat load.

In the Portsmouth air conditioning unit there is a bypass coil which serves as a supplementary heating or cooling coil as required. Chief difference between the Coshocton and Portsmouth units is the use of a separate heating and cooling coil at Coshocton and only one coil at Portsmouth.

The unit used to absorb heat from the outdoor air at Portsmouth consists of a coil, automatic intake and

(Concluded on Page 11, Column 1)

"Aero-Seal" HOSE CLAMPS

Distinctive worm gear tightening action provides powerful belt-like pull-up. Uniform pressure all around prevents leaks. Can be put on or taken off hose in place on pipe. Can be re-used. No loose parts. Compact design. Extremely long take-up. Made in sizes from 1/2" up. Write for circular.

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appearance of the box and greatly enhances its sales-appearance.

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Chief Refrigeration Engineer

Successful 33-year-old manufacturing organization has opening for competent young engineer to head design and application engineering on postwar farm freezers. Ideal midwestern location, excellent living and working conditions, and all possibilities for the future.

Our employees know of this ad so write fully and in confidence giving experience, salary requirements and other pertinent data.

Box 1583, Air Conditioning & Refrigeration News

Refrigeration Units Heat 2 Buildings

(Concluded from Page 10, Column 5)

exhaust dampers, circulating fan, and sprays. During normal operation the air is taken from the outside, over the coil, where heat is given up to the circulating medium, then discharged by the fan back to the outside.

"When the outdoor temperature falls below 20° F., the circulating fan is shut down, the intake and exhaust dampers closed, and a continuous flow of city water sprayed over the coil, in which case all heat absorbed by the system is taken from the city water. During the cooling cycle, the spray-coil combination is used as an evaporative condenser," explained Ambrose.

Both the Coshocton and Portsmouth systems are of the indirect type. At Coshocton water is used to transfer the heat from the outside medium (well water) to the refrigerant ("Freon"), because temperature of the water never need go below 32° F. At Portsmouth, however, Super Pyro anti-freeze solution is employed as the heat transfer medium because its temperature sometimes falls below the freezing point of water.

Refrigerant circuit in an indirect system is fixed, going from compressor through condenser, heat exchanger, float valve and cooler, then back through the heat exchanger to the compressor, pointed out Mr. Ambrose.

HEATING HUMIDIFIER WATER

"In the Portsmouth system the humidifier water is heated by the refrigerant gas by means of a heat exchanger, while at Coshocton the heated water is taken directly from the system. The Portsmouth compressors are each equipped with 50% modulation valves, making possible 25, 50, 75, or 100% capacity modulation.

"This capacity modulation consists of allowing a portion of the refrigerant gas to go directly from the discharge to the suction side of compressor, thus reducing the amount of refrigerant being circulated through the system. A solenoid valve installed in this bypass line controls the amount of gas which is passed through the circuit. The capacity modulation on the Coshocton system is provided by starting and stopping either one or both compressors."

While on the heating cycle, the bypass coil in the Portsmouth system and the cooling coil at Coshocton can furnish cooling simultaneously to some of the zones while heating is supplied to the others. Likewise during the cooling season heating can be supplied to some zones if necessary.

"This feature has proven quite important in these systems," explained Mr. Ambrose, "since some of the occupied space has little or no outside

exposure, therefore, practically requiring cooling the year around, and too, during the heating season the auditorium, when in use, usually requires cooling because of the heat gain resulting from the assembly of a large group of people."

The two systems have essentially the same control equipment. Reversing valves, shutoff valves, dampers, and thermostats are pneumatically operated from a small motor-driven air compressor system and are interlocked with the various electric starting switches controlling the motors.

High and low pressure compressor safety switches and low temperature immersion thermostats, to guard against freezing of the cooler, have been incorporated in both designs. All of the controls are interlocked with the fans so that the system is inoperative until the fans start. After the fans are started the operation of both systems is completely automatic, said Mr. Ambrose.

"The main difference in control of the two systems is the heating and cooling change-over feature. At Coshocton an outdoor thermostat automatically changes the system to the heating cycle when the outdoor

air drops below a predetermined setting and to the cooling cycle when the outdoor temperature rises above the setting; while at Portsmouth two thermostats in the return air duct (set 5° to 6° apart) govern the cycle of operation independently of the outdoor temperature."

Lengthy study of the two heat pump installations by Messrs. Sporn and Ambrose leads them to conclude that "the heating system using water as the heat source operates satisfactorily throughout the range of outdoor temperatures encountered and the system employing air as the source of heat is satisfactory down to outdoor air temperatures of approximately 20° F.

"The idea of using water as an auxiliary heat source, as carried out at Portsmouth, when outdoor temperatures are below 20° F., has not proven fully satisfactory mainly because the temperature of water available was around 38° F. This not only required a great quantity of water to obtain the necessary heat but also caused the compressor to operate at a relatively low suction pressure.

"Operation of the air system at temperatures below 20° F. has not

proven satisfactory," the authors admit. "On several occasions when this was attempted at Portsmouth, difficulty resulted because the frosting of the outdoor coil seriously affected the capacity.

"Improvements in means and methods of defrosting the outdoor coil are a much needed development for successful heat pump installations using air as the heat source where temperatures below 20° F. are encountered.

"Experience both at Coshocton and Portsmouth indicates not only the desirability and need, but also the possibility of simplifying controls.

LESS MAINTENANCE TROUBLE

"The indirect systems at Coshocton and Portsmouth have given less operation and maintenance trouble than the direct systems which have been installed elsewhere on properties of American Gas & Electric Co.," say the authors.

"It is believed that at least part of this improvement is due to having a fixed refrigerant circuit, thus eliminating probable trouble from reversing valves in the refrigerant cir-

cuit and erratic oil return. But most of the improvement is believed due to the advancements which have been made in the manufacture and installation technique of the refrigeration equipment.

"Further study and additional experience is necessary to determine which type of design is more economical and what improvements can be made in each system to achieve better year-around performance.

"Average coefficients of performance of 3.0 on the air system and 3.6 on the water system are impressive results," the authors say. "Both are, however, susceptible to improvement as advancements are made in design and performance of the refrigeration compressor, heat transfer surfaces, and other equipment making up the system which will result in increased operating suction pressures and in decreased head pressures.

"Also, considerable possibilities exist for reducing and in many cases completely eliminating the auxiliaries which in the case of Portsmouth and Coshocton systems reduce the average coefficient of performance approximately 22%."

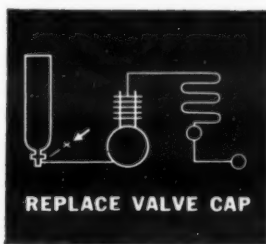
MAINTENANCE TIPS

for users of "FREON-12"

No. 5

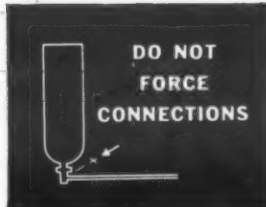
HANDLING CYLINDERS

The following suggestions are offered to assist users of "Freon-12" to obtain maximum efficiency from systems in which this refrigerant is used:



Close valve immediately after the cylinder is emptied to avoid drawing liquid "Freon-12," air, or oil into the cylinder.

Cylinder valve can be protected by tightly securing hoods after cylinders are empty and ready for return.



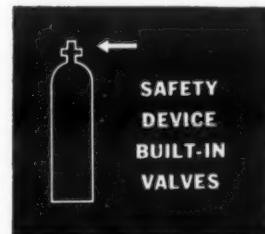
leaks, and valves cannot be repaired.

1. To prevent dirt from entering the valve after charging, replace the brass cap on the outlet connection as soon as the valve is closed and the cylinder has been disconnected. This will also forestall damage to the threads of the valve.

2. Cylinders of "Freon-12" should be stored upright. Keep them in a cool, dry place away from salt or other corrosive elements. Rust damages cylinders. It will cause hood to stick and may injure the valve.

3. The connections on "Freon-12" cylinders should fit easily and snugly. It is unwise to force them. Threads on the system should be the same as those on the cylinder valve outlet. Stripped threads cause

When the cylinder is connected to the system, the valve should be opened slowly. Only those tools or wrenches approved by the compressed gas manufacturers should be used. Hammering valve stems in opening or closing valves may cause damage to the valve or system connection and lead to unnecessary repairs and the loss of "Freon-12."

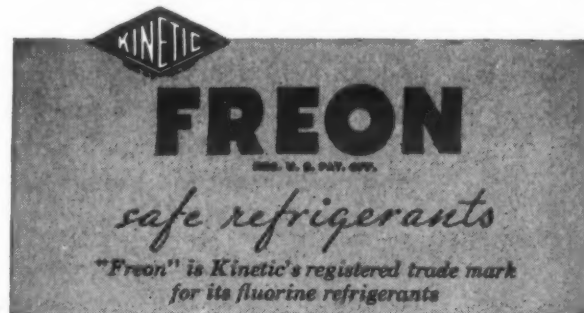


4. "Freon-12" is supplied in cylinders with valves containing built-in safety devices. To insure proper function of these safeguards, users are cautioned against tampering with the valves and fuse plugs.

5. Cylinders should be protected against cuts or abrasion. Cylinders should never be used for rollers or supports, since they are not designed for these purposes.

6. It is recommended that Kinetic Chemicals, Inc., be consulted if any doubt exists regarding the proper handling of "Freon-12" cylinders.

Care in handling and using cylinders of "Freon-12" will repay the owner by helping to prolong their life and maintain high operating efficiency of the refrigeration system. Send for reprints of this and other Maintenance Tips devoted to methods of charging, emptying cylinders, detection of leaks, shutting down systems and other data of value to users of "Freon-12." Write Kinetic Chemicals, Inc., Tenth & Market Streets, Wilmington, Del.



● Please continue to return empty cylinders promptly ●

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Now they can be sold! Day and Night glass filler coolers for industrial cafeterias; bubbler coolers for war plants.

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Fighters Against Disease Find Laboratory Work Improved By Use of Air Conditioning System

BATON ROUGE, La.—Studies of diseased tissue, conducted in the Pathology Laboratory at Louisiana State university, are now carried on in all types of weather as the result of the recent installation in the laboratory of air conditioning equipment.

Installed in the "tissue room" where paraffin sections are prepared, the equipment overcomes obstacles to continuous research that were previously presented by excessively hot weather.

Describing the operation conducted in the L. S. U. Laboratory, John R. Schenken, M.D., Director of the School of Medicine, states:

"We have to do with the study of tissue which is diseased. By the 'tissue room' we mean the room in which microscopic slides of tissue are prepared. In the preparation of microscopic slides it is necessary to embed tissue in paraffin which has

a melting point of about 56° C. This paraffin then is cut in very thin slices measuring no more than 7/25,000 of an inch and mounted on slides.

"During very hot weather this procedure is quite difficult because the pieces cannot be cut off very well in the form of a continuous chain, in other words, as we use the term in the laboratory, 'paraffin ribbons.'

"This air conditioning unit enables us to continue our work at all times. Naturally, the comfortableness of the room has also increased the efficiency of our technicians during very warm weather. We are thoroughly 'sold' on the idea of air conditioning this type of laboratory."

The Carrier equipment in the laboratory consists of a portable air conditioning unit, installed by Higgins Industries, Inc., Carrier New Orleans dealer.

'Fabrics For War' Are Made Under Constant Temperature & Humidity

COLUMBUS, Ohio—A vital feature in the manufacture of fabrics for such war equipment as signal panels, life rafts and airplanes at the Columbus Coated Fabrics Corp. is the maintenance of constant temperature and relative humidity during laboratory tests of cloths employed, as well as in the manufacturing of the coated fabrics.

Said Alfred Shutt of Columbus Coated Fabrics:

"Air conditioning equipment was installed in our pyroxylin Coated Mill and is used for the purpose of evaporating the solvents used in the coating of the various fabrics, by means of an even flow of heated air, the delivery and circulation of which is controlled by Carrier equipment."

Self-contained air conditioning equipment made by Carrier Corp. is used to condition the laboratory air. The Columbus Coated Fabrics Corp. now makes a variety of coated fabrics important to the war effort, such as cloth for barrage balloons, signal panels, rain coats, foul weather clothing, airplanes, life rafts, life vests, delousing bags, jungle bladders, and bomber insulation covering.

Nash-Kelvinator Dividend

DETROIT—Directors of Nash-Kelvinator Corp. at a meeting June 1, voted a dividend of 12½ cents per share on outstanding capital stock, payable June 30.

Technical Bulletins Giving Data On Freezing Preservation of Food

The following list of college bulletins on freezing and storage of foods has been prepared by the National Frozen Food Locker Association. The editors believe it will be helpful to those who are promoting the preservation of foods by freezing among homeowners.

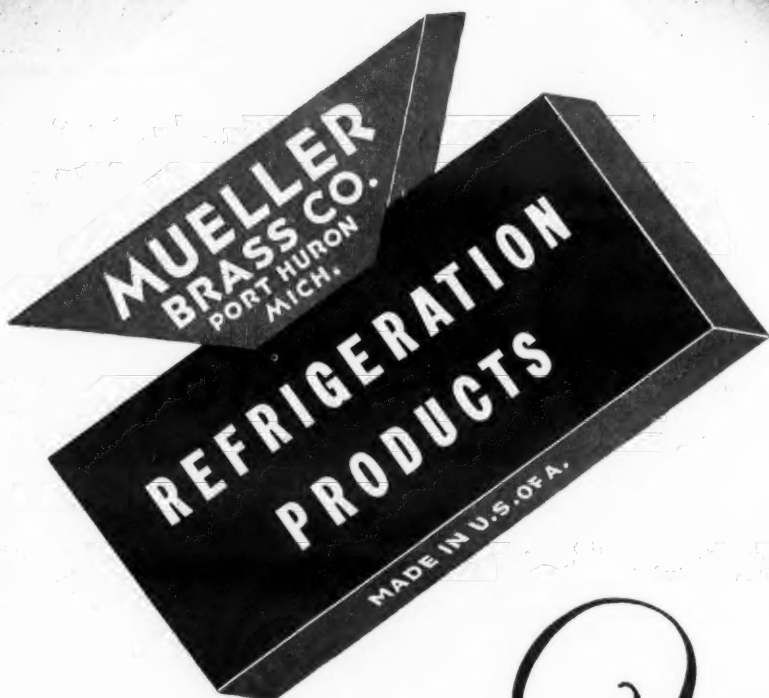
Name of Bulletin	State	Address
Freezing Vegetables & Fruits, No. 478	Colorado	State College, Fort Collins, Colo.
Microscopic Studies of Frozen Fruits and Vegetables, No. 201	Georgia	Georgia Experiment Sta., Experiment, Ga.
Preserving Fruits by Freezing	Iowa	Iowa State College, Ames, Iowa
Preserving Foods in Frozen Food Lockers, No. 209	Kansas	Agricultural Experiment Sta., State College, Manhattan, Kan.
Freezer Storage of Foods	Kansas	Kansas State College, Manhattan, Kan.
Home Refrigeration & Food Preservation, No. 408	Massachusetts	Massachusetts State College, Amherst, Mass.
Freezing Fruits, Vegetables & Meats for Home Use	Massachusetts	Massachusetts State College, Amherst, Mass.
Preservation of Fruits & Vegetables in Refrigerated Food Lockers, No. 208	Michigan	Michigan State College, East Lansing, Mich.
Freezing Fruits & Vegetables, Ext. Folder 111	Minnesota	Agricultural Exten. Serv., University of Minnesota, St. Paul, Minn.
Quality in Frozen Fruits & Vegetables, No. 362	Minnesota	Agricultural Experi. Sta., Univ. of Minnesota, St. Paul, Minn.
Preparation of Fruits & Vegetables for the Frozen Food Locker, No. 79	"	"
Refrigerated Locker Service for Rural Patrons, No. 202	"	"
Cold Storage Locker Plants, No. 345	"	"
Freezer Lockers for Meat, Vegetables & Fruits, Circular 463	Missouri	Agricultural Exten. Service, Columbia, Mo.
Food Preservation by Freezing, CC 60 (Revised)	Nebraska	Agricultural Exten. Service, Lincoln, Neb.
Hog Slaughtering & Pork Cutting, Ext. Circular 247	Nebraska	Agricultural Exten. Service, Lincoln, Neb.
Preservation of Foods by Frozen Storage, No. 220	Montana	Extension Service in Agriculture, State College, Bozeman, Mont.
Freezing & Storage of Foods in Freezing Cabinets & Locker Plants, No. 690	New York	Agricultural Experi. Sta., Geneva, N. Y.
The Home Freezing of Farm Products, No. 611	New York	Agricultural Experi. Sta., Geneva, N. Y.
Freezing Vegetables, No. 322	North Dakota	Agricultural Experi. Station, Fargo, N. D.
Food Preservation by Freezing, No. 224	Ohio	Agricultural Exten. Service, State University, Columbus, Ohio
Preparing Fruits & Vegetables for Refrigerated Locker Storage, O.P. 83	Oklahoma	Agricultural College, Stillwater, Okla.
Food Preservation by Freezing, No. 623	Oregon	Ext. Service, State College, Corvallis, Ore.
Freezing Fruits & Vegetables	South Dakota	Experi. Sta., State College, Brookings, S. D.
Frozen Foods from Freezer Lockers, N.S. 116	Utah	Agricultural College, Logan, Utah
Preparing Fruits & Vegetables for Your Freezer Locker	Virginia	A. & M. College & Poly. Institute, Blacksburg 12, Va.
Locker Freezing of Fruits & Vegetables, No. 161	Washington	Agricultural Experiment Station, Pullman, Wash.
Preservation of Food by Freezing, No. 230	Washington	Extension Service, State College, Pullman, Wash.
Preparing Home-Grown Vegetables & Fruits for Freezing, AWI-63, 16-36807-1	Washington	Bureau of Agricultural and Industrial Chemistry, Agricultural Research Adm., U. S. Dept. of Agriculture, Washington, D. C.

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Our trademark is a point of honor with us as well as a mark of identification of our goods. It means that products of our manufacture carrying it are the best we know how to produce ...and time-tested for the purpose they are intended to serve.

The Mueller Brass Co. line of refrigerator valves, fittings and accessories is exceptionally complete. Service engineers can place full confidence in them. Rigid laboratory control, skilled engineering, highest quality materials, precision workmanship and rigid inspection combine to make our products constantly dependable.

Mueller Brass Co. refrigeration products are in use with our armed forces on practically every front. They are incorporated in units produced by other manufacturers who depend upon us for prompt service and quality products.

Write for catalog number 2007.

MUELLER BRASS CO.
PORT HURON, MICHIGAN



In the 'Post-War Plans' of Many Farm Families

The BEN-HUR Farm Locker Plant

Talk to any farmer about a farm locker plant and his first comment will be, "wish we had it now." And he'll follow with the promise that food freezing and frozen storage is the FIRST thing he's going to add after the war.

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Case for 'Blast Freezing' of Foods Is Made at Engineers' Convention

Pollock of Vilter Says It Cuts Freezing Time and 'May Prevent' Freezer Burn

PITTSBURGH—Blast freezing of food products at high velocities—between 2,100 and 3,200 ft. per min.—will reduce freezing time and consequently improve the product, and in addition may prevent "freezer burn," contends Earl D. Pollock, export manager of Vilter Mfg. Co., who presented a paper on "Blast Freezing Plants" at the thirty-first annual spring meeting of the American Society of Refrigerating Engineers here recently.

Citing numerous tests, Mr. Pollock first outlined results of blast freezing fish fillets contained in stainless steel trays and frozen in 15-lb. blocks, approximately 2 1/4 in. x 13 in. x 17 in., in an air temperature of -20° F.

VELOCITY INCREASE VS. TIME

"The time required to reduce the product temperature to 0° F. with an air velocity of 500 f.p.m. was slightly over 7 1/2 hours. Increasing the velocity to 2,100 f.p.m. reduced the time to 5 1/2 hours. If we further increase the velocity to 3,200 f.p.m., it is possible to attain the temperature required in slightly less than 5 hours," declared Mr. Pollock.

"It should be further noted that curves of the freezing chart indicate complete freezing of the block at either 2,100 or 3,200 f.p.m. in less than 4 hours. This 4-hour period is quite important since commercially we frequently meet specifications requiring quick frozen fillets to be frozen in a maximum time of 4 hours," he said.

"Where such specifications prevail, it will be necessary to use a velocity of at least 2,100 f.p.m., the only alternative being to reduce the temperature of the air materially, which adds to both the investment and operating costs, or to reduce the size of the blocks frozen with consequent increase in handling cost."

Length of time to reduce the same size tray of fillets to 0° F. by other freezing methods was also shown by Mr. Pollock. In the standard sharp freezer where trays are placed on the floor in still air 14 1/2 hours were required to drop the product tem-

perature to 0° F. with an air temperature of -20° F.

RESULTS WITH OTHER METHODS

Placing the trays on standard shelf type coils cut the time to 9 1/2 hours. When an air velocity of 100 f.p.m. was introduced across the pans on the coils, freezing time was further reduced to about 8 hours.

"In none of the cases shown is it possible to approach a freezing rate that would meet the specifications previously referred to," Mr. Pollock averred. "Some improvement in freezing time can be secured through the use of smaller packages, but at the freezing conditions indicated, the smallest commercially practical packages will not freeze with sufficient rapidity to produce a high grade product."

Another test described by Mr. Pollock involved the freezing of standard packages of pork bellies. On a shelf coil in still air the packages were brought down to 0° F. in 30 hours, while in a velocity of 700 f.p.m. the packages were frozen in only 18 hours.

EFFECT ON BACON FREEZING

He compared these results with the blast freezing of slabs of bacon, which were reduced from 74° F. to 24° F. in only two hours with a considerably higher air temperature. The bacon, he pointed out, was intended for slicing, and therefore was not cooled below 24° F.

Mr. Pollock's views on "freezer burn" aroused considerable discussion by A.S.R.E. members. Mr. Pollock's contention was that "freezer burn" is "most likely to occur when products being frozen are cooled slowly so that the surface temperature in contact with the air remains above 32° F. for a relatively long period of time."

"It is generally recognized that 'freezer burn' is simply surface dehydration, and the use of the term is somewhat unfortunate, as the non-technical mind tends to associate burn with direct application of low temperature media and to consider

that its intensity would tend to vary with the temperature just as a burn resulting from contact with combustion products would tend to vary with the temperature of those products," he declared.

CONTROL OF FREEZER BURN

"The most important factor in the control of 'freezer burn' may be said to be the relative vapor pressures of water over liquid water and over ice. When the surface temperature of the product is reduced to the freezing point in a short period of time, dehydration effects are not apt to be important. When the mass of the product and the freezing rate are such as to expose a liquid-containing product surface to air of low water vapor pressure for a considerable time, dehydration is apt to be excessive, and 'freezer burn' may result," stated Mr. Pollock.

While air movement accelerates the rate of vaporization of moisture from the surface, it also accelerates the rate of freezing, decreases the time of exposure of the unfrozen product and is therefore in general less apt to produce difficulties with "freezer burn" than would a less rapid freezing method, he pointed out.

HIS VIEWS ON FREEZER BURN

"Dehydration of 'freezer burn' is

also subject to control by designing the air circulating system with a view to decreasing the moisture-carrying capacity of the air," explained Mr. Pollock. "In a freezer circulating 2,000 lb. of air per minute at -35° F. for the freezing of 1,000 lb. of product per hour, the maximum possible moisture pickup would be 5 lb. per hour. This would be equivalent to a dehydration loss of 0.5%.

"In practice the actual loss would be considerably lower as moisture would be readily available from other sources so that all of the moisture gain in the air stream would not come from the product," he said.

"While substantiating quantitative test data are not available, it may be of interest to note that we have records of one of our blast freezer units which operated 24 hours per day at 1,000 lb. per hour rate for two weeks continuously without defrosting.

"Our experience indicates that unprotected food products can be successfully frozen in a blast freezer

without considerable dehydration losses," he declared.

TRESSLER IS SKEPTICAL

Dr. Donald K. Tressler of General Electric Co. was somewhat skeptical of the suggestion that "freezer burn" is most likely to occur when the surface temperature remains above 32° F. for some time, and asked for more proof. A detailed study of the subject of "freezer burn" in air currents is needed, Dr. Tressler believes.

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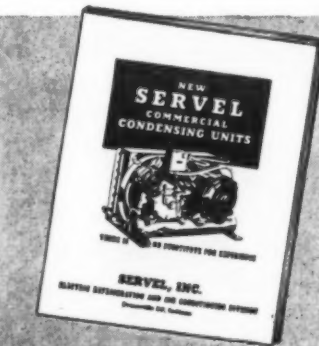
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Keep Your Eye On the Dishwasher

CONSUMER surveys are going full tilt these days, nearly all directed toward finding out what Mr. and Mrs. America are going to buy "when they can get it" after the war.

One item often found high on the list of these postwar desires intrigues us mightily: an electric dishwasher.

Here is a product that is overdue. We have been plugging it in the News for several years; and in the course of boosting it to dealers we have probably come across all the objections there are.

Perhaps it might be well to consider some of these objections before launching into a song-and-dance about the dishwasher's great future.

Before the war the commonest objection we heard from distributors and dealers was that there weren't enough manufacturers. How could they be interested in a product they couldn't obtain?

TOO FEW MANUFACTURERS IS DEALERS' OBJECTION

This objection—too few manufacturers—was even raised by those fortunate enough as to have dishwashers for sale! As one enormously successful distributor put it recently:

"So long as only two or three manufacturers are selling dishwashers, there won't be enough promotion on the item to move it in volume. They'll just be able to skim the cream of the market. Three or four new competitors might liven up the market and change the whole picture."

We have reason to believe that there may be a couple of new competitors.

This leads us into the second and third objections: (1) the price is too high, and (2) the product needs improvement.

Both of these objections will prob-

ably be answered by newcomers, as well as by experienced manufacturers; although they are really mutually antipathetic.

Let's take up the product-improvement objection first. In the writer's home there is a 1938 model electric dishwasher, and it's our pride-and-joy. But we are continually amazed at the reactions of visiting friends when we so proudly show it off.

All too many wives, it has been our experience, either have preconceived prejudices dating back to experiences they have vaguely heard about, experiences of owners who were also disappointed that the dishwasher still required a modicum of attention.

HOUSEWIVES' OBJECTIONS BASED ON VAGUE RUMORS

These objections run about as follows:

- (1) It doesn't wash pots and pans.
- (2) Housewives fear it will harm sterling silver and "company" china.
- (3) There are too many gadgets to watch.
- (4) The dishes must be scraped (this scraping business apparently gags more wives than does the actual washing process, and is the most commonly voiced objection).
- (5) The dishwasher doesn't clear the table before the washing, or stow the dishes away in a cupboard afterward!

It's entirely possible that the new dishwashers will answer each and every one of these answers except the facetious one of clearing the table. But if it does, engineers tell us, it will still be relatively high-priced for a household appliance. In that case, it may still be a distributor's item, rather than a dealer's item.

SALES WILL BOOM WITH ALL-ELECTRIC KITCHEN

The distributor can sell it as part of an all-electric kitchen to the builders of the scads of new homes which market analysts confidently predict will be erected in the decade following the ending of both wars.

That means it won't be a truly "quantity item"—one produced in the millions. To get into that class it will have to be produced at a price—and merchandised as a specialty—with sufficient power to move it into the millions of homes where it is needed

most. These are the homes where there are young children and no household "help."

The dishwasher, to reach this mass market, needs explaining. It really is a marvelous item. But it is in the pioneer stage. Very, very few housewives have ever seen one in the home of a friend. They don't understand it, and they are skeptical about it. They need to be told about it, and to have their attention concentrated on it.

And this can be done only through the strong specialty dealer, the one who understands the pioneering of a new appliance.

If you ask a woman who possesses a complete electric kitchen what appliance she considers the most useful, in a large majority of cases, she will answer the dishwasher. Surveys show definitely that washing the dishes is the most despised of all household tasks. And common experience corroborates the surveys.

With an electric washer, one merely stacks the dirty dishes in a rack, turns on the hot water, and then forgets them. Swirling sprays of scalding water clean the dishes much better than human hands (which can't tolerate such hot water) can do. And the heat generated will dry the dishes after the washing and rinsing processes.

WHY NOT GIVE THE MAID A BREAK, TOO?

Even so, what you hear from the dealers is that those who can afford to buy one can afford to have a maid. There are a number of answers to this objection, and good ones too.

First of all, the maid doesn't enjoy washing dishes any more than the housewife. And the home which boasts a dishwasher ranks at the very top of positions. Some families find that a dishwasher in the house reduces the ante on servant wages. All dishwasher owners report that for building goodwill and good feeling among the "help," the dishwasher is sure fire.

Second, there is a saving on china, for maids can't seem to help breaking and chipping the dinnerware. Third, the dishwasher frees the maid's time to do other tasks and to do regular chores better.

Fourth and most important of all, the dishwasher kills bacteria, whereas old-fashioned washing-by-hand does not. Senator Royal S. Copeland has pointed out in his newspaper health

column that: "Scientists have found as many as 50,000 bacteria on a supposedly clean dish. Bacteria in numbers as high as 25,000 have been found on a single spoon. Several million bacteria can be obtained from a single drop of dishwasher. It is the belief of investigators that most of the water used to wash dishes is teeming with dangerous germs."

And Dr. James G. Cummings, chief of the U. S. Bureau of Preventable Diseases, declares: "Dishes and forks, knives and spoons washed in the usual way may become carriers of diseases that cause 30 to 45% of the deaths in the United States."

HEALTH, BEAUTY, AND LEISURE ARE SELLING POINTS

Now there is an argument which might almost be termed "terrific." It costs about one cent a day to operate an electric dishwasher . . . a penny a day keeps the doctor away.

Next to health comes beauty. Here is the topmost argument when selling a dishwasher to a housewife who does her own work. What warm, greasy dishwasher does to the hands is well known. What it does to the face—fretting and unsunny dispositions leave lines, wrinkles, and that aged appearance—is even more drastic. Money "saved" by not buying a dishwasher is thrown back threefold to the beauty parlors.

The dishwasher (1) helps solve the servant problem; (2) protects health and helps prevent the spread of communicable diseases; (3) saves hands, checks wrinkles, and postpones the ravages of age on beauty; (4) adds to leisure, increases happiness, improves dispositions.

All in all it's a mighty good investment. At the outset, dealers can figure that the dishwasher is something every family will want when they see it demonstrated. But they will say that they can't afford it. It is up to the dealer to help them to justify their purchase of the Most Useful Appliance in their own eyes. By elaboration of some of the arguments briefed in the foregoing paragraphs the dealer should be off to a good start.

Here's virgin field, a marvelous product—both awaiting intelligent promotion. The time may be ripe for the dishwasher to emerge from the pioneering stage into the profitable volume selling stage. Good dealers and good promotion can do it.

They'll Do
It Every
Time

By
Jimmy
Hatlo



Warmee Outlines a 7-Point Program For Scientific Selection of Salesmen

CHICAGO—A seven point program for the scientific selection of salesmen in the postwar was outlined to the recent National Federation of Sales Executives meeting at the Edgewater Beach hotel by Roy H. Warmee, sales promotion manager of the Minneapolis-Honeywell Regulator Co.

Describing scientific selection as something more than "just testing," but rather a "complete program," an orderly procedure of matching capabilities with job requirements, Warmee listed his seven points as:

- 1) Comprehensive Recruiting,
- 2) Personal History in the Application,
- 3) A Diagnostic Interview,
- 4) Weighted Interview,
- 5) A Battery of Selected Tests,
- 6) Interpretation of Test in Second Interview, and
- 7) Employee Counselling.

COMPREHENSIVE RECRUITING

Using a series of skits acted by members of the Minneapolis-Honeywell sales forces, he explained that Comprehensive Recruiting means, "developing methods of finding manpower through the proper channels or at the proper sources and bringing them into the organization." He said that his company looks for new salesmen in the same manner that "any big league baseball team looks for better talent."

"Personal History" in the Application means that the application blank should be properly planned to enable the job applicant easily to paint a clear, accurate picture of himself, Warmee said.

"The 'Diagnostic Interview' is the first 'real' interview we have with the applicant," he continued.

"Here we probe a little deeper behind the information he has given us in writing, and we have a chance to analyze those personal characteristics, such as appearance, poise, and his attitude toward his work, his fellow men and his future."

WEIGHTED INTERVIEW

The "Weighted Interview," Warmee said, is the first attempt to grade the applicant for certain qualifications. If the man grades high enough he is invited to take a series of tests; if he fails to make the minimum grade in this weighted average, he is dropped. The "Battery of Selected Tests," he continued, measures the applicant's natural and acquired characteristics, his ability to learn, and his ability to get along with and influence other people. These tests are sent to the Personnel Institute,

Chicago, for grading and interpretation.

In the sixth step, "Interpretation of Test in Second Interview," the applicant is told the results of his previous tests, and while tests are not always perfect, "we take this opportunity to adjust our interpretations and the recommendations of the Personnel Institute to suit the circumstances of the individual. By this time we have a fairly accurate measure of the man under consideration. We have a sound basis for hiring him."

"Employee Counselling," Warmee

stated, is applied after the man has been hired and as he develops or fails to develop on the job.


Warmee pointed out that scientific selection of applicants for jobs has received a great impetus from the armed services where more than 11,000,000 men have been tested along lines similar to those used by his company. He also expressed the opinion that the tests themselves have improved as a result of the experiences gained by the Army and Navy and that most large companies will use scientific selection of new employees after the war.

York Corp. Announces Accessories Catalog

YORK, Pa.—York Corp. has just issued a new catalog of accessories and supplies for refrigeration and air conditioning plants.

The book is designed to give quick, complete "finger-tip" information under the following headings: accessories and supplies, ice cans and air fittings, valves and fittings, oil, cold storage doors, renewal parts, tables and data.

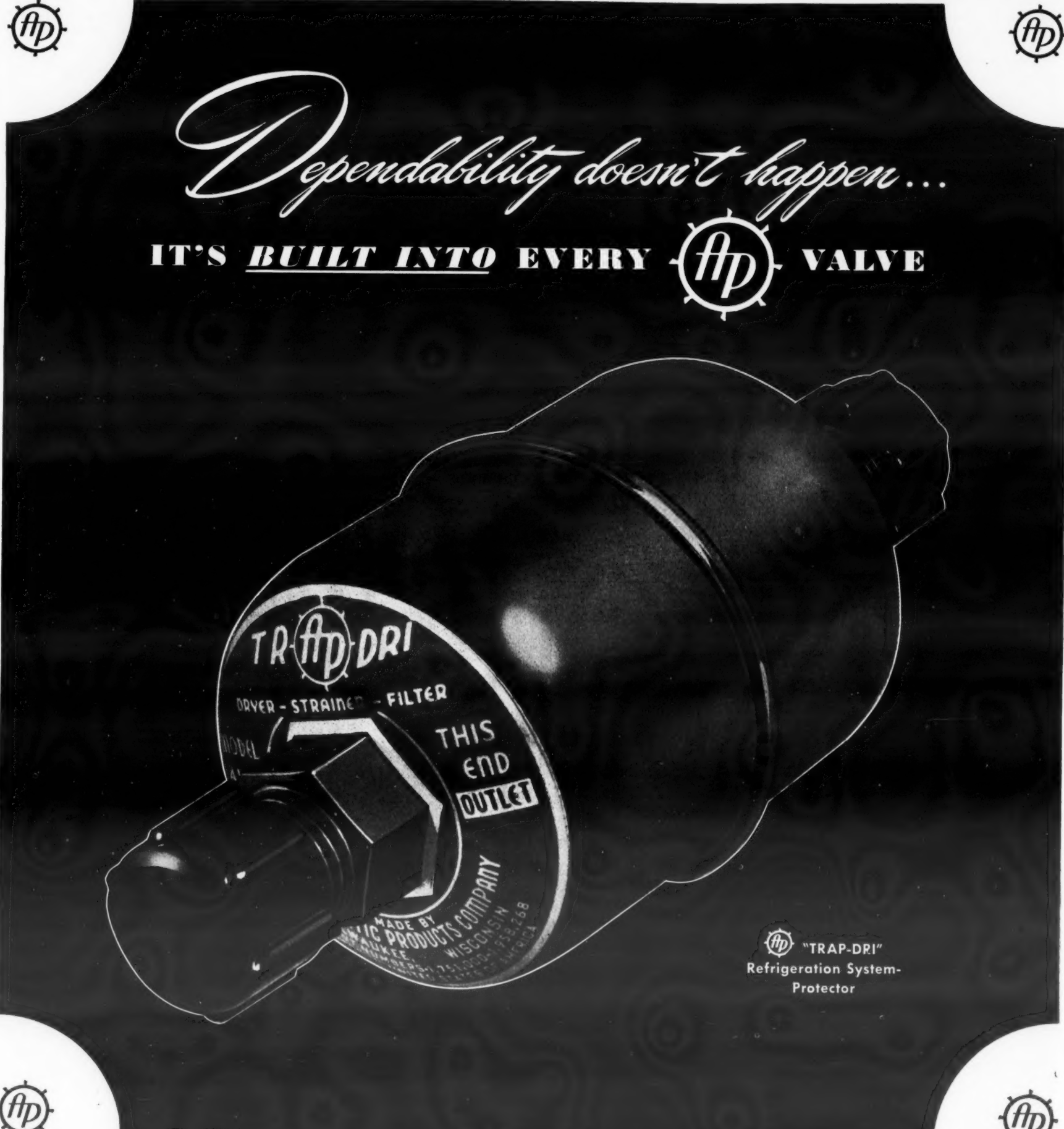
Under the latter, sizes, weights, performance data, net prices, photographs, mechanical drawings, descriptions, and so forth, have been included. The catalog is the loose leaf type, divided into sections and tabbed for ready reference.



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Servicing the G-E Refrigerator Line

Replacement Procedures

Control Replacement (Cont.)

1942 STANDARD CONTROL

1. Loosen bellows tube clamp on left side of evaporator above header and slide end of tube out from under clamp.
2. Loosen screws holding escutcheon plate to cabinet top plate. Screws are located just in back of the escutcheon plate.
3. Pull escutcheon plate and control mounting plate forward. Take off escutcheon plate.
4. Remove screws holding control to inner mounting plate.
5. Pull out control and disconnect leads to control terminals.
6. Install replacement control by reversing previous steps.

Be sure bellows tube is completely under clamp and does not touch evaporator at any other point.

1942 DE LUXE CONTROL

1. Loosen bellows tube clamp on left side of evaporator above header and slide end of tube out from under clamp.
2. Pry out lower edge and remove control escutcheon plate.
3. Remove screws holding control mounting plate to cabinet top.
4. Pull outer plate and control knob straight forward.
5. Loosen screws holding handhole cover to cabinet top plate inside evaporator.
6. Pull evaporator escutcheon plate forward and then remove handhole cover by pulling forward until slotted holes slip over screw heads.
7. Pull out loose insulation above

Type of G-E Control

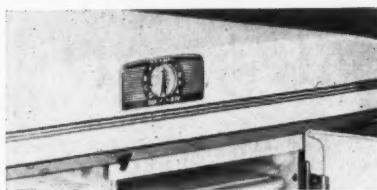


Fig. 39—1942 deluxe control.

8. Pull control and inner mounting plate through handhole.
9. Remove screws holding control to inner mounting plate and disconnect leads to control terminals.

Editor's Note: This is the eleventh of a series of articles describing servicing procedures for the General Electric Co.'s line of household refrigerators.

10. Install replacement control by reversing previous steps. Be sure bellows tube is completely under clamp and does not touch evaporator at any other point.

LK MACHINES

1. Slide off rubber bushing from bellows-tube well.
2. Pull bellows tube from well.
3. Remove control mounting screws and pull out control.
4. Disconnect leads from terminals.

When leads are connected to control with locking connector plug, twist and pull out plug.

Replacement Hints For 1942 Models

Fig. 38—1942 standard control.

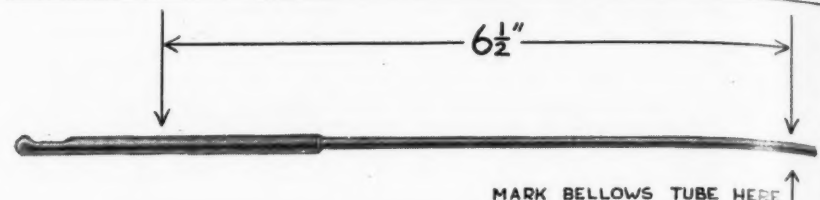
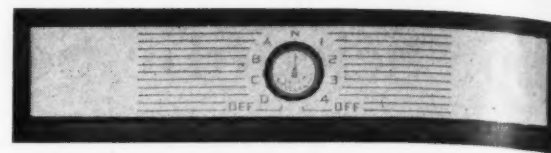


Fig. 40—Mark bellows tube as shown for LK machines.

5. Install replacement control by reversing previous steps.

Mark bellows tube exactly six and one-half inches from middle of bulb and insert into well only up to mark. A variation of one-quarter inch can affect evaporator temperature as much as five degrees. (See Fig. 40.)

CG MACHINES

1. Loosen bellows tube clamp on evaporator and slide end of tube out from under clamp.
2. Remove control knob by turning it counterclockwise.
3. Take off control escutcheon plate by removing mounting screws.
4. Remove control knob extension by turning it counterclockwise.
5. Take out four screws holding control-relay to cabinet top plate.
6. Pull control-relay down from cabinet top.
7. Remove four mounting screws from front of control-relay mounting plate and one screw from rear of control-relay case.

8. Remove control-relay from case.
9. Disconnect leads from relay base.
10. Install replacement control-relay by reversing previous steps.

DR MACHINES

A complete control replacement is seldom necessary on DR machines because various control parts on these machines can be adjusted or replaced. However, a complete control can be replaced if the occasion arises.

1. Remove back panel of A and C controls by taking out screws.
2. Take off cover of D and E controls.
3. Remove mounting screws.
4. Disconnect leads to control terminals. Mark them if colors are not distinct.
5. Remove clamp holding bellows tube to evaporator and straighten tube.
6. Lift off control and pull bellows tube up through cabinet top.
7. Install replacement control by reversing previous steps.

Ben Hur Gets Second 'E' For War Effort

MILWAUKEE — Second Army-Navy "E" award for continued high war production has been presented to Ben-Hur Mfg. Co., producer of farm freezing lockers and trailers. Widely used before the war, more than 70,500 all-steel trailers have been delivered on war contracts and full-speed wartime production calls for 200 units a day, the company reports.

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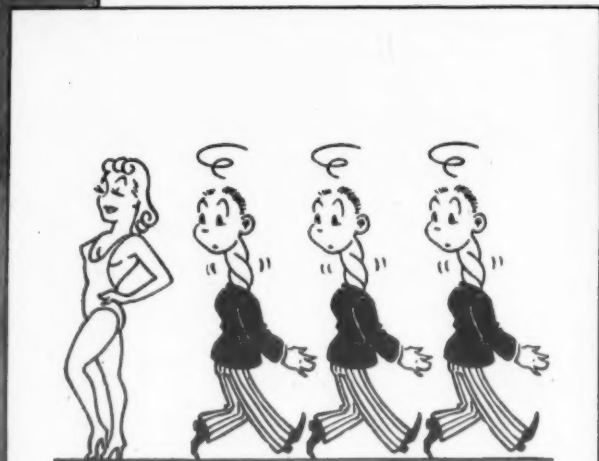
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YOURSELF
A PAT
ON THE
BACK**



WITH THE "RECALIBRATOR"

AFTER the job is done it's usually the little things that make the big difference — that send either orchids or brickbats your way.

Take gauges and dial thermometers, for example. Any well built instrument can be adjusted to accuracy to begin with. But every gauge can also be knocked out of adjustment, and once that happens complete accuracy is usually just a memory.

That's where a little thing like the "Recalibrator" makes a big difference. Turning that screw does something that has never been as satisfactorily accomplished before — makes the gauge accurate again at all points on the scale, by re-establishing proper relation between bourdon tube and movement.

Now that every job is a vital job, make it a point to look for the "Recalibrator", and get gauges that can be kept accurate... always. That's the kind of foresight that deserves a pat on the back.

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The "RECALIBRATOR"

is available in all Marsh Gauges; standard in all Marsh Dial Thermometers. It's the mark of a gauge that has behind it more than 75 years of gauge-making experience.

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Area: 300

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1901 San Fern

How Packaged Units Handle a Small Freezer and Storage Plant

Each Section of the Plant Given Units Best Suited For It

DAYTON, Ohio—Two hermetically sealed 5-hp. self-contained units can be used to supply refrigeration for a typical small cold storage plant, including a sharp freezer and frozen food storage space, according to engineers of Airtemp Division, Chrysler Corp. here.

One of these units would be used to supply refrigeration to 0° F. frozen meat and produce storage room and to a -10° F. sharp freezer room. The second unit would handle a 35° chill room and a 35° produce storage room.

An individual building, such as shown in the diagram, may be constructed for this suggested system, but the design might also be adapted to an existing structure, the engineers point out.

Walls, except the outside walls of the 0° room, are insulated with 4 inches of redwood bark wool, glass wool, or other suitable insulation material. Outside walls of the 0° room are covered with 6 inches of insulation.

Freezer and storage rooms are equipped with standard type refrigerator doors. Overhead tracks for handling meat should be installed to suit the owner's convenience.

The 0° F. frozen meat and produce storage room is equipped with a fan coil unit, and the sharp freezer is cooled by Dole plates suspended from the ceiling. Refrigerated plates also serve as shelving for quick freezing of meats and produce after processing.

The 5 CUA condensing unit which would operate the storage and sharp freezer rooms would be set at minus 20° F. suction temperature. A thermostat in the 0° room operates a solenoid valve in the liquid line to the coil located in this room. A back pressure regulating valve should be installed on this coil because it does not maintain as low a temperature as the -10° F. freezer plates.

Automatic defrosting is incorporated into this design by means of a time switch and relay which closes the circuit to electric strip heaters built into the coil. When the coil is defrosted after several minutes, the strip heaters are shut off and the solenoid valve returns the control to the thermostat.

In the main liquid line to the sharp freezer room is a solenoid valve operated by a thermostat located in the room, maintaining proper temperature within the sharp freezer room. Defrosting in this room is accomplished manually by brushing plates with a wire brush.

Upon reaching the predetermined satisfactory temperature in both 0° and -10° rooms, solenoids close and the condensing unit pumps down and stops automatically on low pressure control, an integral part of the condensing unit.

The second 5 CUA unit is intended to cool the 35° F. chill room, where the body heat is removed from meat prior to storage, and the 35° produce storage room. This unit also operates at 20° suction temperature.

Temperatures in both rooms are controlled by solenoid valves in the liquid lines to the coils which in turn are actuated by thermostats located within the cooled spaces. Here again, when temperatures reach the proper point, the condensing unit pumps down and shuts off on low pressure control.

Design calculations and equipment suggested for each of the four rooms comprising the plant are as follows:

35° F. CHILL AND AGE ROOM

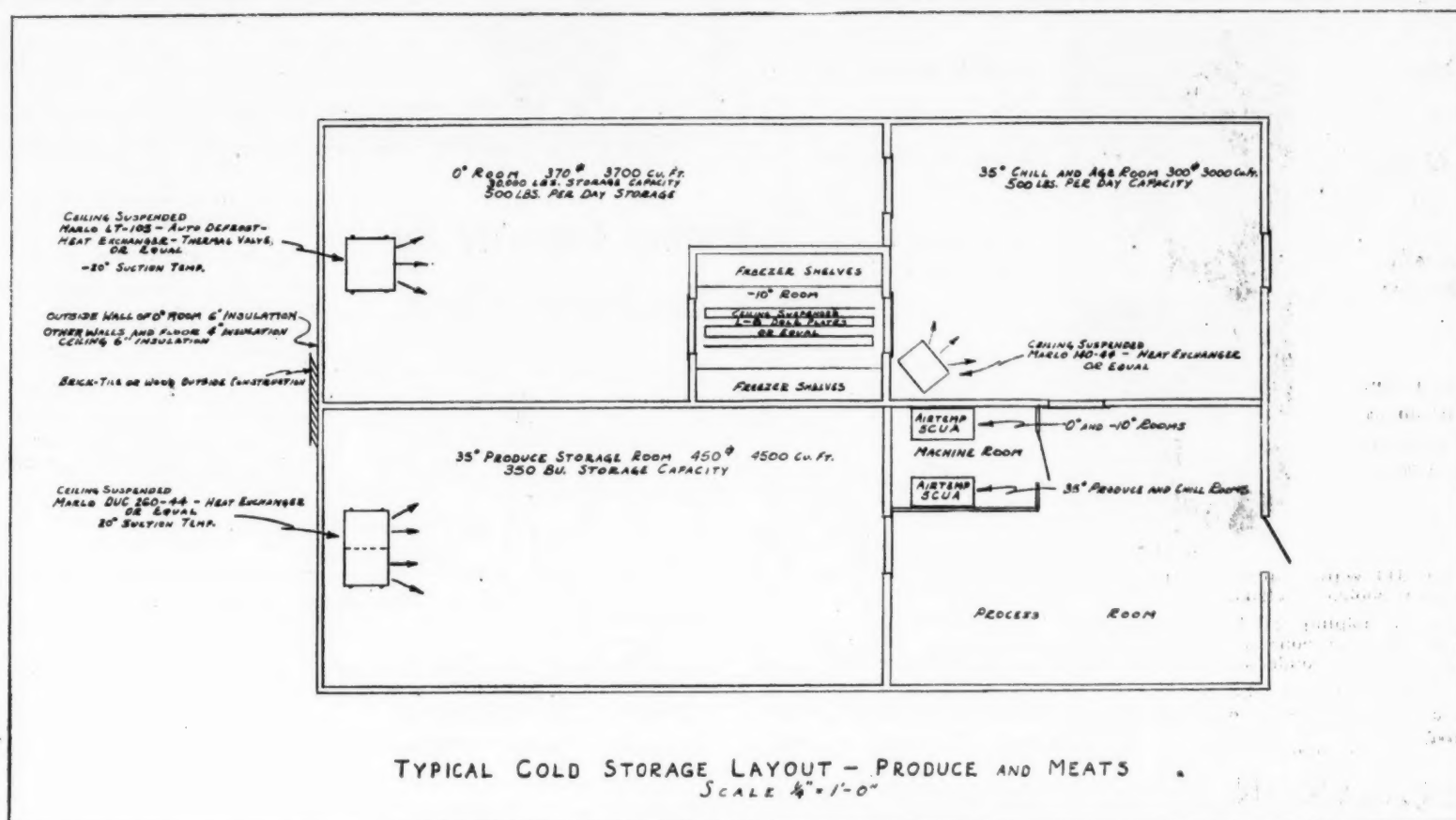
Area: 300 sq. ft.

ELECTRIC WATER COOLERS

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L. E. RABJOHN

1801 San Fernando Rd. Los Angeles 41, Calif.



TYPICAL COLD STORAGE LAYOUT - PRODUCE AND MEATS
SCALE 1/4" = 1'-0"

Volume: 3,000 cu. ft.
Outside temp. 95° F.
Construction heat gain, 4,088 B.t.u. per hour.

Usage load (based on 10 air changes per 24 hours), 1,335 B.t.u. per hour.

Product load (based on 500 lbs. in 24 hours), 875 B.t.u. per hour.

Total—6,298 B.t.u. per hour.

Compressor load (based on 20 hour maximum demand), 7,550 B.t.u. per hour.

Equipment Selection: One Airtemp 5 CUA unit at 20° suction. Also serves produce storage room.) One Marlo DUC-140-44 fan coil unit, with heat exchanger, or equal.

35° W. PRODUCE STORAGE ROOM

Area: 450 sq. ft. Vol. 4,500 cu. ft.
Outside temperature, 95° F.
Construction heat gain, 4,950 B.t.u. per hour.

Usage load (based on 10 air changes per 24 hours), 2,000 B.t.u. per hour.

Product load (based on 14,000 lbs. in 48 hour pull down), 14,000 B.t.u. per hour.

Total—20,950 B.t.u. per hour.

Compressor load (based on 20 hour maximum demand), 25,150 B.t.u. per hour.

Equipment Selection: One Airtemp 5 CUA unit at 20° suction. (Also serves chill and age room.) One Marlo DUC 260-44 fan-coil unit with heat exchanger or equal.

0° FROZEN MEAT AND PRODUCE STORAGE ROOM

Area: 370 sq. ft. Volume, 3,700 cu. ft.
Outside temperature 95° F.
Construction heat gain, 6,450 B.t.u. per hour.

Usage load (based on four air changes per 24 hour period, 1,180 B.t.u. per hour.

Product load (based on 500 lbs. per day, 2,371 B.t.u. per hour.

Total—9,901 B.t.u. per hour.

Compressor load (based on 20 hour maximum demand), 11,900 B.t.u. per hour.

Equipment Selection: One Airtemp 5 CUA unit at minus 20° suction. Also serves minus 10° freezer room. One Marlo L-T 105 low temperature unit or equal with automatic defrost, heat exchanger, and thermal valve.

MINUS 10° FREEZER ROOM

Area: 80 sq. ft. Volume 800 cu. ft.
Outside temperature 95° F.
Construction heat gain, 1,621 B.t.u. per hour.

Usage load: (None—opens to low temperature areas).

Product Load: (Based on freezing 200 lbs. per 12 hours, 1,952 B.t.u. per hour.

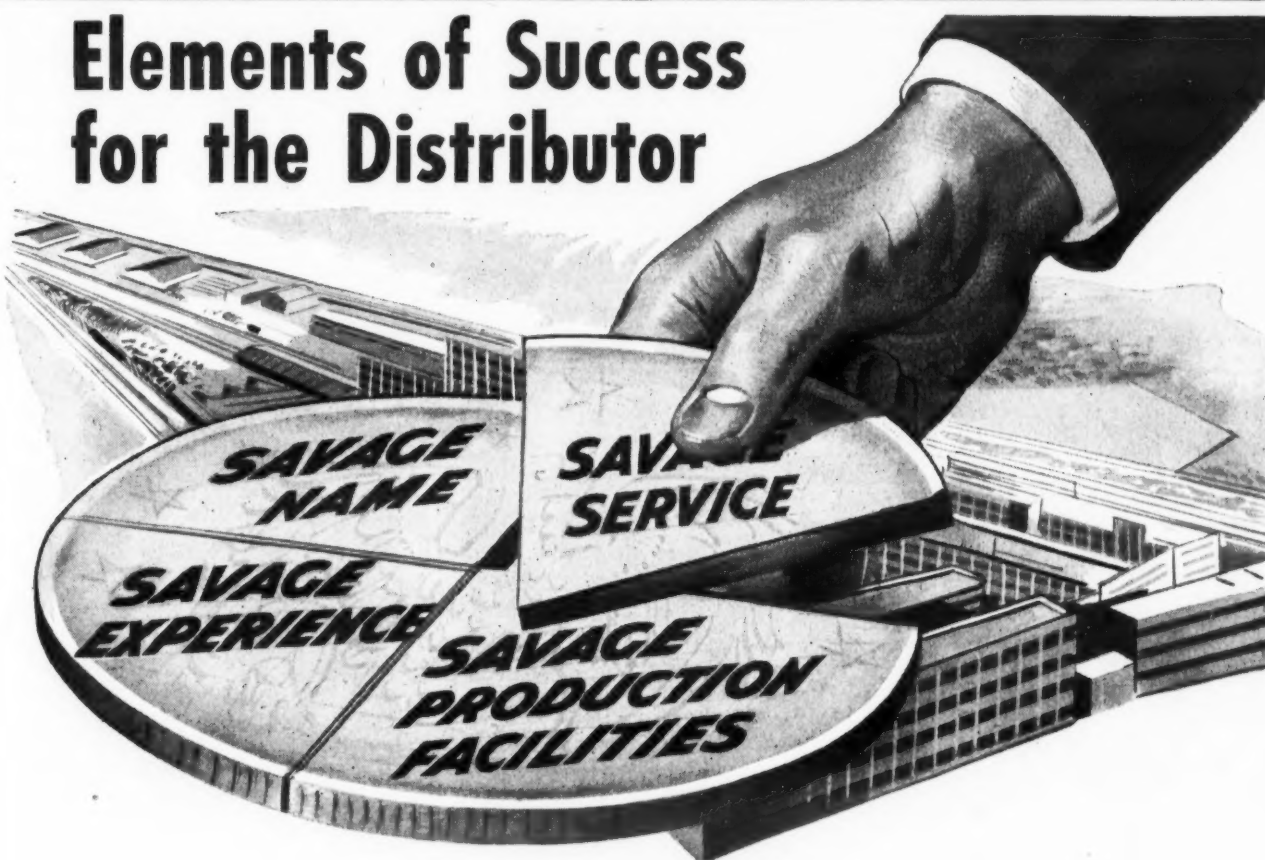
Total—3,573 B.t.u. per hour.

Compressor Load: (Based on 20 hour maximum demand), 4,290 B.t.u. per hour.

Equipment Selection: One Airtemp 5 CUA unit at minus 20° suction. (Also serves 0° storage room). One bank Dole plates Model L-4 (ceiling suspended) or equal. Dole shelf plate assembly to fit requirements or equal.

Above drawing shows how a small cold storage plant was arranged to be used for the processing of both fresh and frozen foods. Chill room and storage room are held at 35° F. by one condensing unit hooked up to blower units. The sharp freezer room is equipped with plate-type evaporators and the 0° F. storage room has a blower unit and these two rooms are handled by a separate condensing unit.

Elements of Success for the Distributor

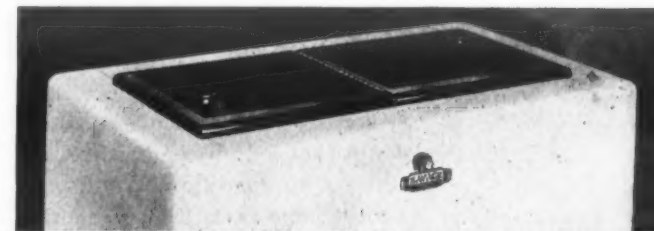


The outstanding success of Savage Ice Cream Cabinets points to the advantages to be enjoyed in the future by the distributor of Savage Frozen Food Cabinets.

Savage Refrigeration Engineers are now at work on refinements in design, construction, and production. Their planning is based on long experience, supplemented by constant research and testing in a modern laboratory.

In performance, competitive value, and public acceptance, Savage Frozen Food Cabinets will offer the distributor every element for successful operation in the huge future market for these products.

Savage Arms Corporation
Refrigeration Division
Utica, N.Y.



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FOOD MERCHANDISING • ICE CREAM • FOOD PROCESSING and STORAGE

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WATER REGULATING VALVE

Quiet
•
No Chatter
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Practically friction-free
•
Maximum flow with minimum head pressure differential
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No. 614

Double Bellows Seal
•
Removable Body Seat
•
For all refrigerants—except ammonia
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Standard connections 3/8" x 3/8" F.P.T.
•
Pressure Controlled
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Aminco No. 614 water valve regulates the amount of water passing through water-cooled condensers.

This valve is helping to keep systems in tip-top condition and because of its close control action it provides insurance of longer life for water-cooled condensers.

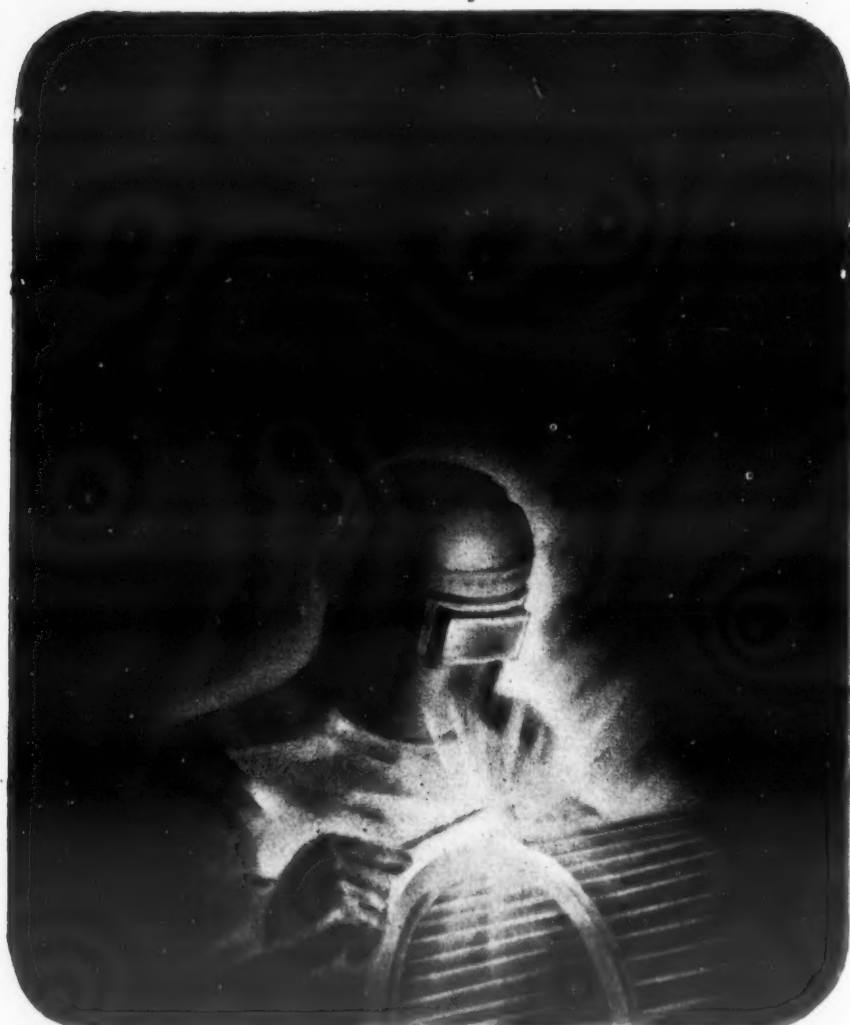
Sold, as always, through jobbing channels, it is an invaluable aid to the service-man concerned with keeping installations operating at full efficiency.

For more details see Bulletin No. 15.

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We invite inquiries for your present and future requirements. Prompt shipment on blowers, coils and heaters.



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Army Refrigeration Problems

By P. B. Reed

Manager, Refrigeration and Air Conditioning Division, Perfex Corp.

Testing Capacity By A Condenser Check

Conventional water-cooled condensers are made in three main styles: the shell-and-coil, double (concentric) tube, and shell-and-tube types. The counter-flow principle is used with

all three types although most effectively with the latter type.

SHELL-AND-COIL TYPE:

The usual form of shell-and-coil condenser consists of a horizontal or vertical (illustrated in Fig. 1) cylindrical steel shell within which is a copper coil which may be wound in any one of many different forms, through which the water passes.

The hot gas from the compressor is fed into the shell and around the

coil. After the vapor condenses it drops to the bottom of the shell and passes out to a receiver or, as in some styles, the lower part of the shell may be used as a receiver.

The shell-and-coil type of water-cooled condenser was originally the most widely used but, during the last 10 years or so, it has been gradually displaced by the shell-and-tube or the concentric tube types, especially in the sizes above one horsepower,

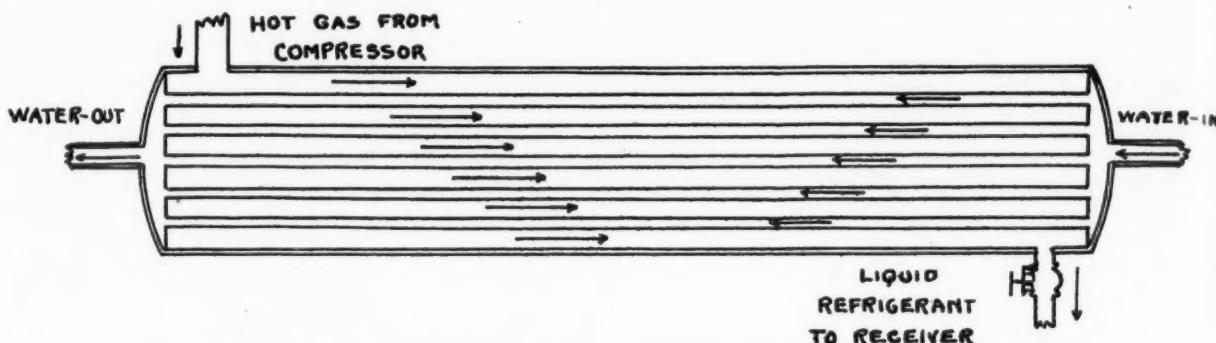
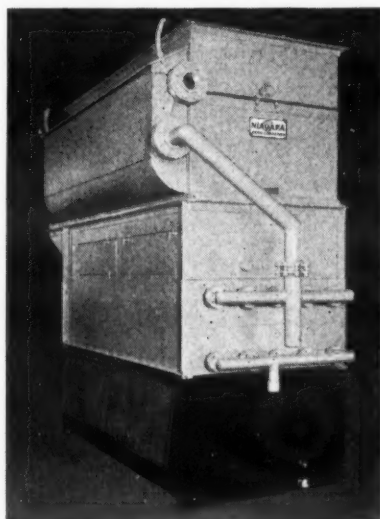
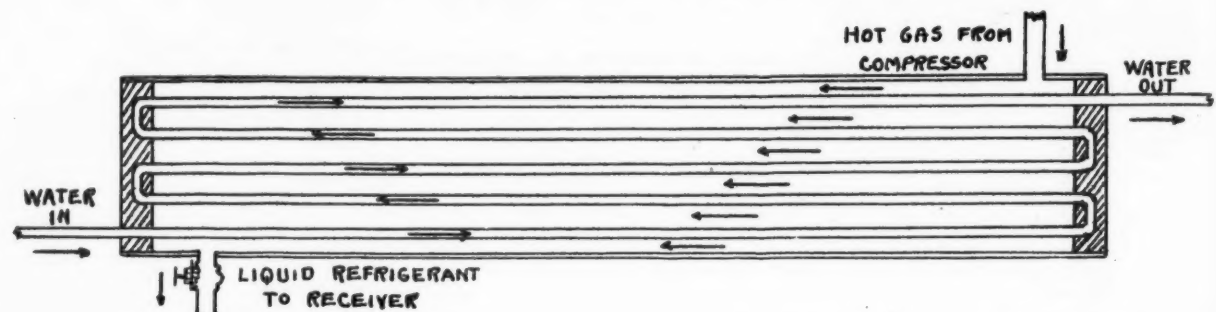


Fig. 3A (above) represents a shell-and-tube condenser with single-direction water flow. Fig. 3-B shows a shell-and-tube condenser in which water flow is reversed.



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It takes the Niagara
DUO-PASS
to ASSURE the
Advantages of
evaporative
condensing!

• Users of the Niagara AERO EVAPORATIVE CONDENSER have saved up to 35% of power while increasing useful refrigerator capacity obtained without increasing compressor equipment. This has been achieved by reducing compressor head pressure.

Only the Niagara DUO-PASS Aero Condenser assures these gains because only the Niagara Condenser has the patented DUO-PASS which lowers temperatures so that no deposit of salts or scale is precipitated on the condenser tubes. This improvement secures the full capacity of the evaporative condenser throughout its long life.

The Niagara DUO-PASS AERO CONDENSER also saves the user the cost of 95% of his condensing water and the installation expense of water-handling equipment. For complete information and records of users' savings, write to

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Field Engineering Offices in Principal Cities



INDUSTRIAL COOLING • HEATING • DRYING
HUMIDIFYING • AIR ENGINEERING EQUIPMENT

due to their generally better efficiencies.

DOUBLE-PIPE TYPE:

The double-pipe or concentric-tube type of condenser, shown in Fig. 2, is a very efficient type, occupies but little space and is relatively inexpensive. (Concluded on Page 19, Column 1)

FIND HIDDEN REFRIGERANT LOSSES WITH VISOLEAK

Save TIME MONEY REFRIGERANT



IT'S SIMPLE —

Just place VISOLEAK in the high side of the system. This finely-treated colored refrigerant oil will penetrate every nook and cranny and spot those hard-to-find leaks. If refrigerant can leak out, so can VISOLEAK. A red stain will mark the leak for your instant repair.

IT'S SAFE —

Made from the finest oils, it's non-toxic, non-poisonous, non-corrosive and non-inflammable. Can be used safely and effectively with ANY refrigerant.

IT'S ECONOMICAL —

Wholesale Prices		Save 10% on case lots
4 ounce bottle	\$1.00	48 bottles
8 ounce bottle	1.75	24 bottles
1 pint bottle	3.00	12 bottles
1 quart bottle	5.00	6 cans
1 gallon can	16.00	

See your jobber or write for complete information

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Testing Capacity By A Condenser Check

(Concluded from Page 18, Column 5)

sive. The condensing water enters at the bottom, flows upward through the inner tube and passes out at the top. The hot gas from the compressor enters at the top, flows through the annular space between the inner and outer tubes, loses heat to the water in the inner tube and to the room air through the outer tube, and condenses into a liquid which is bled off from the bottom.

This counter-flow method brings the liquid refrigerant into thermal contact with the coolest water, so that the liquid is cooled to as low a temperature as possible by the water.

The cooler the liquid refrigerant that is fed to the expansion valve (or high-side float, low-side float, capillary tube), the less of the liquid that is required to cool the liquid itself down to evaporator temperature, and the more refrigerating effect is left in the liquid for useful

through the tubes if, as sometimes happens in locations where the water contains mud or other solids, the tubes become coated inside or entirely stopped. A coating acts as an insulator and prevents proper heat transfer; as a result the head pressure rises, the condensing unit capacity falls off, the unit operates an increased percentage of time and at increased cost.

Type 3A permits more truly the use of the counter-flow principle than type 3B. Either of these two types are very efficient, occupy a small space, are cleanable, and are becoming increasingly popular.

MEASURING THE HEAT ABSORBED BY THE WATER:

All of these water-cooled condensers make use of the principle of sensible heat, for the heat that the water takes from the refrigerant raises the temperature of the water. If, therefore, we measure the amount of water passing through the condenser and its temperature rise, we can easily determine the amount of heat taken from the refrigerant by the water.

Suppose, for example, we have a water-cooled unit with inlet water at 65° and we find that it is 95° when it leaves the condenser. For every degree one pound of the water rises it has taken one B.t.u. from the hot gas, or for the 30° rise it has taken 30 B.t.u. per pound. There are approximately 8½ pounds per gallon of water, so one gallon rising 30° has absorbed 250 B.t.u.

We measure the water from the condenser in a 5 gallon can and find that when the condensing unit is running it fills the can in five minutes, which is at the rate of one gallon per minute or 60 gallons per hour. At 250 B.t.u. per gallon, for a 30° rise the 60 gallons have picked up heat at the rate of 15,000 B.t.u. per hour (60 x 250).

HEAT OF COMPRESSION:

However, all of this heat did not come from the refrigerator. Some of it is the "heat of compression"—the heat developed from the work done on the suction gas in compressing it and raising its pressure to the discharge pressure.

For a given suction pressure, the higher the discharge (head) pressure, the higher is the compression ratio and the higher is the "heat of compression." At medium suction pressures and moderate head pressures, the "heat of compression" represents about ⅓ of the total heat taken up by the water so that the 4/5 (or 80%) left represents the heat removed from the refrigerator.

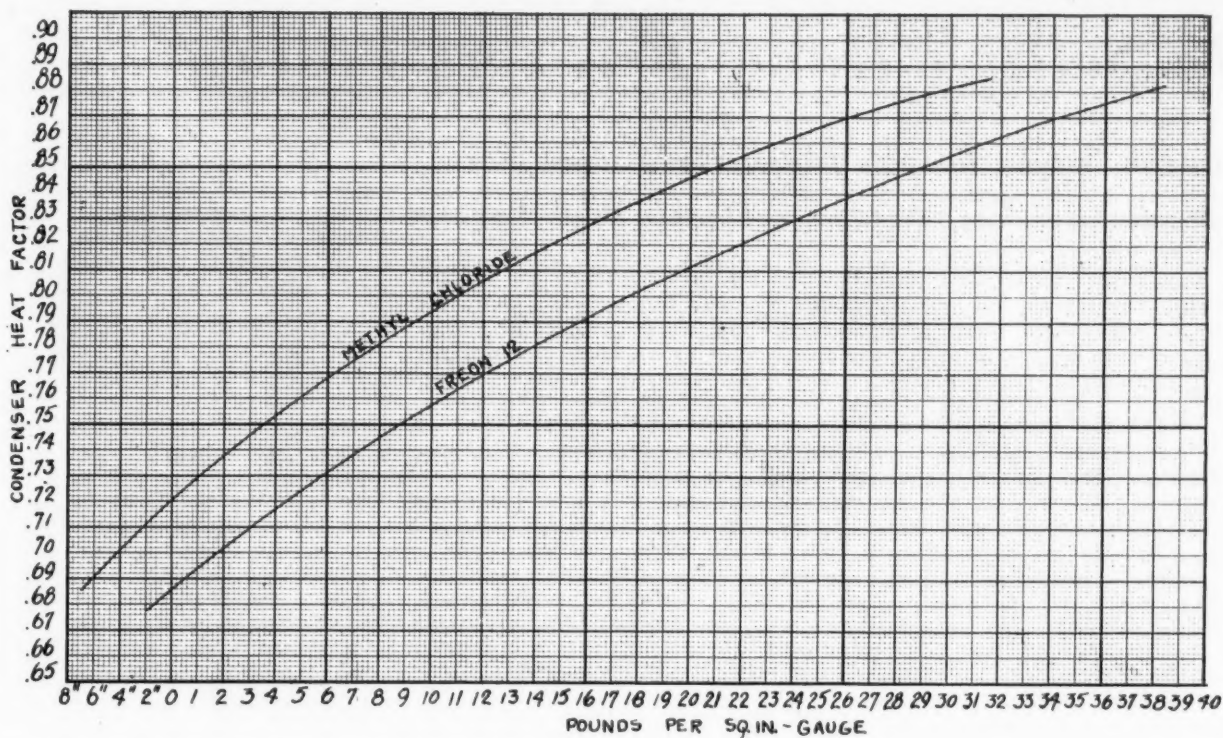
If, therefore, we take 4/5 of the 15,000 B.t.u. which we found that the water had gained in passing through the condenser, we have 12,000 B.t.u. which is the amount of useful work done by the condensing unit; that is, the 12,000 B.t.u. is the capacity of the condensing unit under those conditions.

VARIATION IN THE FACTOR:

Upon referring to Fig. 4 we see that .80 or 80% (4/5) is the factor to be used when the average suction pressure ("Freon-12") is about 18 p.s.i. (or methyl chloride about 11 p.s.i.) if the outlet temperature of the water is about 95°. If the average ("Freon-12") suction pressure is low, say 9 p.s.i. (about 0°), and the water valve is still set the same, that is, to maintain a 95° outlet and consequently the same discharge pressure, the ratio of compression will be greater and, as a result, the heat of compression will be greater.

At the lower suction pressure, the capacity of the condensing unit is less, so that instead of the factor being .80 it is .75 (¾ instead of 4/5). At the 9 p.s.i. suction pressure we

Fig. 4. Relation of Suction Pressure To the Condenser Heat Factor



find that the condenser used only 3 gallons and 1 quart in 5 minutes or 39 gallons per hour, at the same temperature rise of 30° (65° to 95°).

The heat picked up by the condenser water is, therefore, 9,750 B.t.u. per hour (39 x 250). Multiplying this by the new factor of .75 we find that the capacity of the condensing unit at 9 p.s.i. is 7,312 B.t.u. per hour. If the water outlet temperature is greater than 95° the factor will be

smaller than those shown on the curves in Fig. 4 by about .01 for 5° in outlet water temperature.

The above method and data enables us to test a water-cooled unit in the field with a fairly close degree of accuracy, so that if there is any question about whether or not the compressor is "putting out" its rated capacity, it may be tested and the results compared to the manufacturer's capacity tables.

It must be borne in mind, however, that this test is not as accurate as a good calorimeter test but may be used to good advantage when, in the field, there is need to determine the capacity of a water-cooled condensing unit. With care in measuring the amount of water and the temperatures of the inlet and outlet water, accuracy within 5% may be expected.

Fig. 1. Shell-and-Coil Type

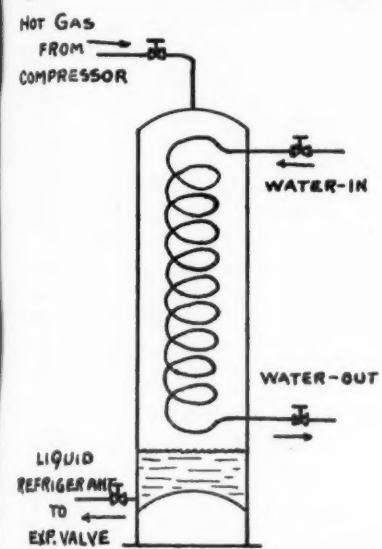


Fig. 1 represents the usual form of a shell-and-tube condenser.

cooling of the evaporator. Also there is less flash gas which reduces the capacity of the expansion valve.

SHELL-AND-TUBE TYPE:

Figs. 3A and 3B illustrate two quite common forms of shell-and-tube condensers used with condensing units 25 hp. and smaller. They are usually mounted horizontally on or hung under the condensing unit base or mounted in a stand on the floor or wall adjacently.

In the type shown in Fig. 3A the water flows through parallel tubes connected together in a header at each end of the shell. The hot gas from the compressor flows in an opposite direction to the water (counter-flow) as indicated by the arrows.

In this type the tubes must be of comparatively small diameter in order to obtain a large amount of surface between the water and the gas, and still retain high water velocity so as to obtain good heat transfer. This necessity of using small tubes complicates the field service problem as there is more hazard of the small tubes becoming fouled, and if they do the small tubes are difficult to clean.

In the design shown in Fig. 3B the tubes can be larger and more easily cleaned and by employing the method of reversing the water flow by return bends or passages cast in the end heads, the rate of heat transfer is satisfactory.

In either design the ends of the shell are removable flanges bolted to the shell so that they may be removed and a swab or brush passed

Fig. 2. Double Pipe or Concentric-Tube Condenser

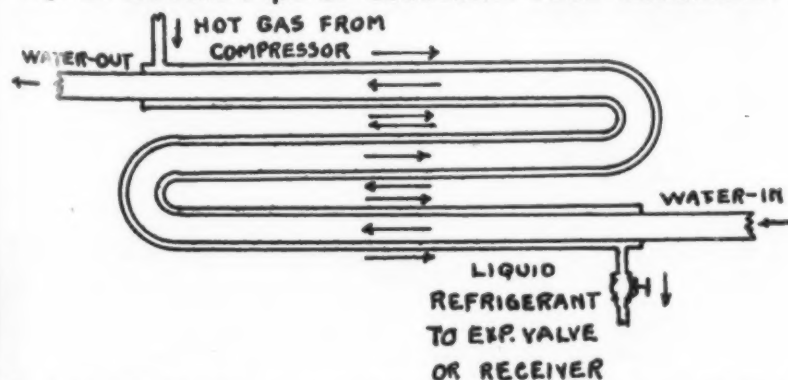



Fig. 2—The double pipe or concentric type of condenser shown above is a very efficient type, occupying little space and being relatively inexpensive.



Artic

(DU PONT METHYL CHLORIDE)

SERVICE NEWS

WAR-TIME NEWS LETTER

Dear Sir:

Your Methyl Chloride requirements can be met ... provided everybody cooperates by ordering only what is needed, promptly emptying and returning all cylinders. Outstanding empties mean so many less cylinders available for shipments. We can't get new cylinders ... so we must get the greatest use out of what we have.

Here's what John C. Minor, Chief of the Gas Cylinder Section, Container Division, War Production Board, wrote us on May 24:

"The need for steel conservation and the critical position of gas cylinders require suitable justification for their manufacture and delivery. Such delivery cannot be approved unless all possible use has been made of existing equipment. It appears that over a considerable period, marked improvement in cylinder turnover has been shown in the various industries with the exception of methyl chloride and sulphur dioxide. Unless improvement is effected in this field, the scheduling of orders for cylinders for those gases will not be justified.

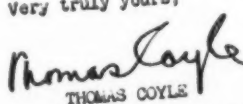
"If this failure in cooperation is due to an effort on the part of distributors or users to accumulate a stock through unwarranted fear of a possible future shortage of the gas, attention is called to Priorities Regulation No. 1, amended 3/18/44, Par. 944.14, and to the penalties for violation of this regulation in Par. 944.18.

"Par. 944.14, Inventory Restriction, reads, no person shall knowingly make delivery of any material whatever and no persons shall accept delivery thereof if the inventory of such material of the person accepting delivery is in excess of the practicable minimum working inventory The term "practicable minimum working inventory" is to be strictly construed.

"While some variations in rate of turnover are to be expected on the basis of current methods or rate of operations, it is believed that a "practicable minimum working inventory" can, in general, be construed as a 90-day supply of methyl chloride or sulphur dioxide.

"Any application for scheduling of delivery of new cylinders will be considered in light of the above."

In the interest of better service, we solicit your full cooperation in complying with the principles set forth in the above letter.

Very truly yours,

 THOMAS COYLE
 Manager, Chlorine Products Division

BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

Most Locker Plant Operators Plan On Selling Home Freezers Postwar

Hotpoint Survey Reveals Many Have Ideas For Expanded Services; Appliance Dealer Will Benefit

CHICAGO—Will the 5,000 frozen food locker plants throughout the nation undertake the merchandising of home freezer units postwar?

Approximately 80% of them will, according to a survey just completed by Edison General Electric Appliance Co. Seven percent of them sold home freezers before the war, the survey showed.

What effect will this approximate 4,000 new outlets for this appliance have on established appliance dealers, department, hardware, furniture stores, and other regular appliance merchandisers?

It will be the adjunct to quick acceptance of a new appliance necessary to remove the "pioneering" burden, believes F. F. Duggan, manager, refrigeration division, Edison General Electric (Hotpoint) Appliance Co. In announcing the tabulations of the survey among the 5,000 locker plant operators, of whom more than 1,200 answered a series of questions, Mr. Duggan commented:

"I wouldn't say that these plants would help local dealers if they were just new competition, but they are not; they are essentially a food processing and packing industry. While new as an industry, their rapid strides make them an important force in food handling.

"We know that the war has placed new emphasis on the value of properly processed and packaged foods. We also see that refrigeration has completely captured the market for quality food preservation. But to

make frozen foods readily available as part of the daily diet of Americans, food freezing plants, which will include locker service, must be available in all communities."

Mr. Duggan noted that the conventional domestic refrigerator had reached a market saturation of more than 70% of the 30 million wired homes of the nation and that more than 3½ million refrigerators were sold in 1941. There was an unfilled demand for millions of units both for replacement and to satisfy the unsold market, when war production halted peace time business.

A market forecast today must consider this unsatisfied market, to which will be added the needs of millions of citizens now serving in the armed forces who will insist on

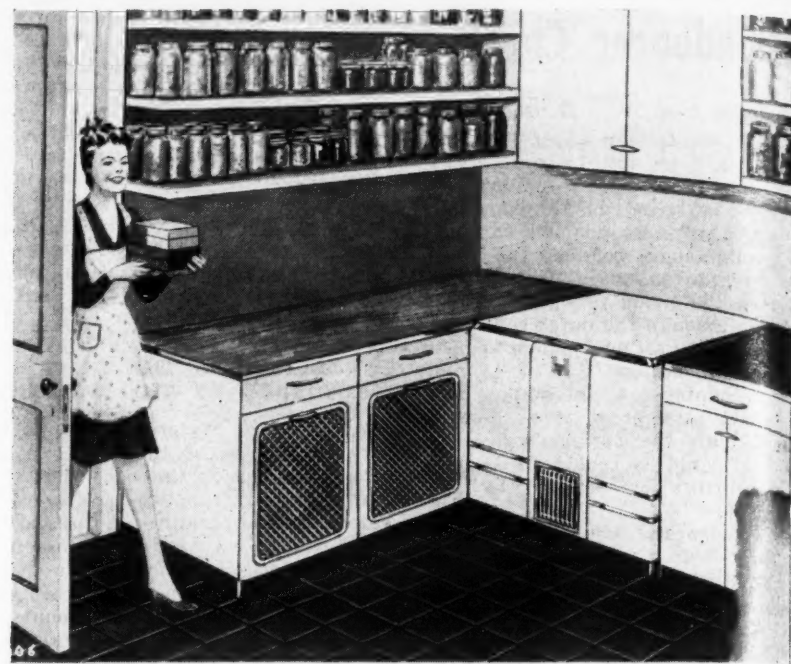


F. F. DUGGAN
Manager of the Hotpoint refrigeration division, comments on locker operators' plans to sell home freezers.

electrical conveniences when they return from the nation's service and take up domestic life. This demand for first class refrigeration will be filled largely with conventional models. Says Mr. Duggan:

"In prewar, refrigerators offering

Something New Has Been Added to the 'Fruit Cellar'



This is an artist's conception of the "home storage" room that may replace the oldtime fruit cellar in tomorrow's homes. The home freezer cabinet as pictured here is set flush with counter tops on which food is probably to be prepared for processing.

two temperatures, one of which was especially designed for frozen food storage, had not yet reached their full potential market when selling halted. While the entire refrigeration industry was watching the initial sales results on home freezer storage cabinets, this sensational new appliance hardly had time to establish itself in the market when the war intervened.

"It is noteworthy that while the war has slowed down the marketing of the home freezer, a compensating factor is the fact that the food requirements of our fighting forces both here and abroad have created among Americans a consciousness of the great value of well processed foods, and the need for proper diet to protect the national health. These facts will reduce, possibly by years, the time required to establish the home freezer as a standard part of American household equipment."

Regardless of what happens in the home freezer field, Mr. Duggan believes there will be an immediate demand for millions of standard refrigerators, which are being readied

for mass production as soon as war conditions permit. He said that they will be not unlike those sold in 1941, and while the units with two temperature compartments will become increasingly popular, in his opinion it will be several years before these replace the standard model refrigerators in majority popularity.

The home freezer business, which will be a part of all appliance dealers' merchandising, will develop rapidly, but contingent upon other factors. Amplifying this, Mr. Duggan said:

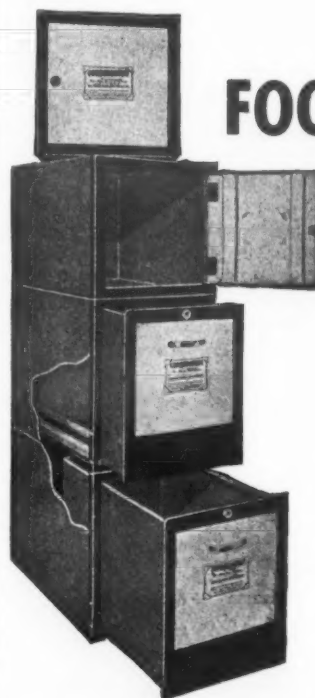
THE OPERATOR AS A MERCHANDISER

"Locker plant operators will retail home freezers, 80% of them say; that would be 4,000 dealers. Actually, with all respect to these fine service organizations which are the backbone of the frozen food business, they will stock home freezers, but they are not experienced appliance merchandisers.

"How many of them will take the (Continued on Page 21, Column 3)

For Safety, Convenience, Economy and Appearance—You Want MASTER Lockers

Every compartment and every drawer is a completely individual unit, so any combination may be selected. Original installation, expansion or replacement is an easy, simple and economical matter with



MASTER FOOD CONSERVATORS

Sturdily constructed of Steel . . . enamel finish . . . interiors removable from bank for cleaning or whole locker removed from bank for cleaning . . . utmost in sanitation and many other features.

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You can't appreciate the unusual advantages that MASTER Lockers offer until you get complete details. Write today.

Endorsed by and sold through distributors of refrigeration and insulation.

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Member of Frozen Food Locker Manufacturers and Suppliers Ass'n. organized for your protection.

Over 400,000 Master Food Conservators in Use



Aluminum and Plastics work well as a team

An aluminum ring carries this Plexiglas* navigator's dome, serving as a strong, rigid mount in the plane. A plastic seal makes the assembly secure and weathertight. It's another case of aluminum and plastics working together to handle a difficult assignment well.

By using an extruded aluminum shape for the ring, metal is placed exactly where needed to receive the Plexiglas and its sealing ring. The extrusion method of manufacture supplements aluminum's natural light weight by making certain that there's no excess of metal employed. Formed and welded into a

solid circle, production of this aluminum ring goes fast. Costs are moderate.

Wartime products contain a number of similar examples of aluminum and plastic teamwork, each material contributing some desirable property to the finished product. Designers of postwar products are certain to find this combination equally valuable.

Alcoa engineers will gladly give you the benefit of their experience in employing aluminum and plastics jointly. Write ALUMINUM COMPANY OF AMERICA, 1975 Gulf Building, Pittsburgh 19, Pennsylvania.

*Registered T. M. of Rohm & Haas Co.

ALCOA ALUMINUM



What 1,154 Locker Operators Said on Selling Food, Cabinets

1. Do you now process and package frozen food?

	No. of Responses	%
Yes	904	78.3
No	250	21.7
Total	1,154	100.0%

Of the 904 locker plant operators answering the first question in the affirmative, 897 or 99.2% of the total answering yes to this question said that they processed and packaged meats: 684 or 75.7% of the total processed and packaged vegetables and 698 or 77.2% of the total replies indicate that they now process and package fruits.

2. Do you now sell frozen food to retail consumers?

	No. of Responses	%
Yes	596	51.6
No	558	48.4
Total	1,154	100.0%

Of the 596 frozen food locker operators answering "yes" to this question, 357 or 59.9% of this total now sell frozen meats to retail consumers: 533 or 89.4% of all respondents sell frozen vegetables and 547 or 91.8% of all answers retail frozen fruits.

3. Do you plan to sell, process, package, and retail frozen food after the war?

	No. of Responses	%
Yes	933	80.8
Uncertain ..	70	6.1
No	151	13.1
Total	1,154	100.0%

What Kind?	No. of Responses	% of Those Answering Yes to this Question
Meats	760	81.5%
Vegetables	846	90.7%
Fruits	855	91.6%

4. Do you intend to expand your operation for the retailing of frozen food after the war?

	No. of Responses	%
Yes	852	73.8
Uncertain ..	136	11.8
No	166	14.4
Total	1,154	100.0%

The overwhelming number of locker plant operators or 73.8% answers this question in the affirmative. Only very few respondents indicated in their comments that they didn't think they would expand their operations for the retailing of frozen foods after the war. Others expressed the desire to become retailers for home freezers as well as other electrical household appliances. Some few want to stay in the freezing and processing end of the business only and want to stay away from retailing.

5. Do you plan to sell and distribute commercial brands of frozen food, after the war?

	No. of Responses	%
Yes	888	76.9
Uncertain ..	92	8.0
No	174	15.1
Total	1,154	100.0%

6. Do you plan to distribute packaged frozen food by truck, on a scheduled delivery basis, to homes after the war?

	No. of Responses	%
Yes	209	18.1
Uncertain ..	209	18.1
No	736	63.8
Total	1,154	100.0%

7. Did you sell frozen food home storage cabinets before the war?

	No. of Responses	%
Yes	82	7.1
No	1,072	92.9
Total	1,154	100.0%

8. Do you intend to sell frozen food home storage cabinets after the war?

	No. of Responses	%
Yes	910	79.0
Uncertain ..	152	13.2
No	92	7.8
Total	1,154	100.0%

Locker Operators Seen Helping To 'Pioneer' Freezers

(Continued from Page 20, Column 5) time from their food processing, packaging, storing, and numerous duties to get out and sell home freezers? Old established appliance merchants know that appliance selling is a specialized business calling for advertising, display, and salesmanship; they know that it's a full time job.

"They know that a fully equipped service department must stand behind every dealer who succeeds in this business. Most of all, they know that you have to go out after the business, even with well-established national brands. Department, furniture, and hardware stores, usually favored by central downtown locations, just send out highly trained men if their appliance department is to remain alive. Specialty appliance dealers use every device to search out prospects and sales and usually the owner of the business is the best salesman.

DON'T OVERLOOK LOCKER MEN

"In view of these known facts about appliance merchandising, the established outlets will probably control the sales of this new appliance as they do others, but the importance of the locker plant industry must not be overlooked. Those 5,000 locker plants are pioneering the market, and supplying the food service which will affect the utilitarian aspects of every home freezer."

Hotpoint's survey among locker operators included 10 basic questions, with numerous requests for comments. While Mr. Duggan said the answers to the questions are enlightening, the comments accompanying the answers show the operators to be progressive, and definitely committed to better food handling and refrigeration methods.

The general public is not aware of the scope of this new service, and even within the food and refrigeration industries there is confusion as to the meshing of various aspects of frozen food supply to homes: For

example, the exact functions of the (1) locker operator (2) commercial brands of frozen foods (3) uses of home freezers. The industry is agreed that the rapidity with which frozen foods reach mass markets depends upon their quality, accessibility, and upon competitive prices.

The limited demand for frozen branded foods today is traced to poor display and handling in retail stores, the absence of sufficient quantity to create a public consciousness of frozen foods, and to prices which are somewhat higher than competition, said Mr. Duggan.

(Concluded on Page 22, Column 1)

WHEN PEACE COMES

KOCH

WILL AGAIN PRODUCE COMMERCIAL REFRIGERATOR EQUIPMENT FOR CIVILIAN USE

NOW SOME SELF-CONTAINED REACH-IN REFRIGERATORS ARE AVAILABLE FOR THOSE WHO CAN QUALIFY

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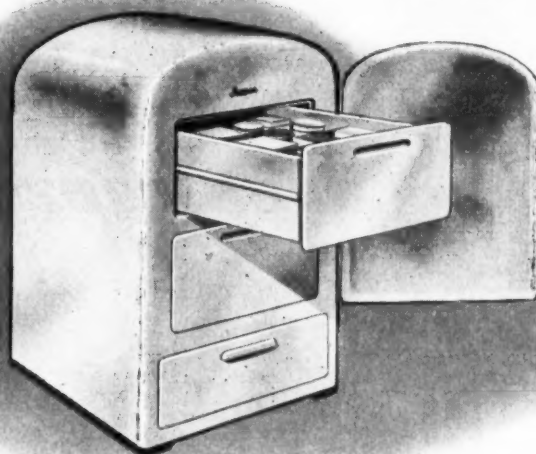


KOCH REFRIGERATORS

NORTH KANSAS CITY . . . MO.



you can have your cake ...
And eat it too



AFTER THE WAR . . . Believe it or not . . . you will be able to have your cake and eat it too, during the post-war years when SEEGER places its quick-freeze storage cabinet on the market.

You will be able to eat a half a cake, for instance, and then place the balance in your SEEGER cabinet, where it will stay frozen until you wish to serve it, a week or month later. Of course, you will keep many other food items such as fresh strawberries, peas, beans, and meats.

SEEGER, the leader in refrigeration for over a half a century, has developed this modern quick-freeze cabinet only after extensive research, which includes surveys of thousands of households.

The SEEGER cabinet offers the great convenience of drawers which pull out so you can obtain the food package you want with the least trouble. The size is six cubic feet which permits the storage up to 300 pounds of food . . . this cabinet is the climax of experimentation, research, and labor . . . presented to you by SEEGER, foremost in the field of refrigeration, for post-war use.

SEEGER REFRIGERATOR CO.
SAINT PAUL 6, MINNESOTA

Look to

SEEGER

for the best in freezing cabinets

PIONEERS IN COMMERCIAL • HOME • INDUSTRIAL REFRIGERATION

Locker Operators Suggest Many Features For Home Freezers

(Concluded from Page 21, Column 5)

Supplies of frozen foods in quantities suitable for more than immediate consumption at savings for volume buying must be on the market at known outlets; this would include packages of vegetables and fruits suitable for long period storage—and meats, sold by dealers who package large orders and pass along the savings. The mass market will be gained only when the food industry offers product service which meets these demands, at prices which are competitive, Mr. Duggan said.

The locker industry is the first line of supply in most communities, although home processing and freezing of foods will play a big part in supplying garden-fresh vegetables and fruits to many families.

"Home freezing will supplement, and to a certain extent, replace canning," Mr. Duggan believes. "Women will not overlook the goodness of corn, peas, and other foods that can be preserved at home direct from their gardens or bought at low seasonal prices and stored for winter."

"Women will want these aids to improved diets, greater convenience, more luxurious year-round eating, and all of the other wonderful advantages that home freezers offer; they will want to enjoy the substantial savings possible by preserving food in this manner and they will see real use—value that will appeal to them as efficient American homemakers—the day is not far off when

these women will insist upon having a home freezer."

PLANS FOR EXPANDED SERVICE

Mr. Duggan cited the tabulations from the Hotpoint survey to bring out that locker plant operators, close to the public by the nature of their business, are thinking in terms of expanded services to increase their usefulness. He said:

"About 74% of the operators say they will offer expanded services in postwar by becoming food retailers. Slightly over 19%, or an indicated 1,000 dealers will service home freezers with frozen foods from regular route trucks."

"Notice that if we add to these the other frozen food services projected, or now available, by food companies, milk companies, beverage distributors, and independent businesses, we see a picture of a complete functioning industry which is only waiting to have the customers procure the cabinets to store the foods."

In the survey, the answer to question No. 2 indicates that approximately one-half of the locker plant operators now retail food to their customers, while this will increase to 80% in postwar. This appears to be sound forward thinking based on evidence that the market is expanding, and frozen food distribution is developing to meet the demand.

Mr. Duggan concluded from this question that "30 million American

homes are going to want better food after the war, and they will demand frozen foods, so it is up to the processing and packaging food industries to supply good commercial brands for national distribution and up to strong local processors to service local preparation and freezing needs; at the same time, it is up to the electrical appliance industry to supply good cabinets at reasonable prices, and back them up with good service policies guaranteeing successful operation. American women will demand that each phase of the service be right—that way there will be practically no limit to the acceptance."

DESIGN FEATURES, PRICES

In suggesting features for a desirable home freezer, 83 operators said they favored a storage unit built into the regular domestic unit. Accessibility—improved cabinet arrangement was listed as needed on 48 questionnaires. The need for a cabinet for storage only, not freezing, was pointed out by 27 answers. The other suggestions, making a total of 400 locker operators answering this question, were scattered over 28 topics.

The locker operators did not give much information on what the selling price of a home freezer should be. Out of 10 answers received to this question, seven said the price should be under \$250.00. Likewise, they did not establish a predominant favorite as to size, or capacity for frozen foods. In summing up the questionnaire, Mr. Duggan said:

"The food locker people were most cooperative, and the fact that 25% answered our questions, in return for

exchanging the information among them, shows that each is interested in what others in the industry are thinking and planning. They show that they are definitely out of the infant industry stage and stand as a big factor in postwar food service and distribution." Mr. Duggan noted that despite the fact that these operators say they will sell appliances, their answers confirm their importance as a food and service industry. He concluded:

"Our conclusion is that appliance

dealers, including department, furniture, and hardware stores, as well as such specialists in selling as modern air conditioning and heating concerns, are the big factors in home freezer distribution. Like other appliances, the home freezer will take smart, aggressive advertising, display, and the type of sales effort known to these proven specialists. Mrs. America has heard a lot about these new home freezers, and she probably wants one—but she'll have to be sold."

Suggestions For Some Principal Features of a Home Freezer Unit

9. Have you any suggestions for features which would be desirable in a frozen food home storage cabinet?

Some 400 suggestions were received, and inasmuch as many of the comments contained more than one suggestion, a tabulation showing percent to total replies received would be meaningless. We are listing, therefore, in the following the suggestions submitted by the locker operators in order of number of mentions received from each suggestion.

Suggestions	No. of Mentions	Suggestions	No. of Mentions
Have a combination household refrigerator and zero temperature holding cabinet.....	83	Easy way to defrost cabinet....	1
Accessibility—separate compartments for meats, fruits, vegetables, etc.	48	Frozen food home storage big enough to hold cases	1
Zero temperatures storage cabinet only—NOT to be used for initial freezing	27	Besides electric models have one for either gas or oil.....	1
Price should be moderate.....	24	Simple adjustment and temperature control	1
Must have plenty of space.....	21	Automatic defrosting	1
Compactness of design—to be used as auxiliaries to plant lockers	21	Have a space where food can defrost	1
Shelves or trays to prevent digging or musing	21	Low speed compressor—less wearing parts. Greater condensing surface	1
Low operating cost	17	For farm trade it would be nice to have a place for two cans of cream to be chilled.....	1
Have quick (sharp) freeze compartment and holding (zero temperature) compartment which should be largest.....	16	Make models so that two or more could be placed side-by-side and used commercially..	1
Front or side opening	11		
Square cabinet	8		
Good insulation	6		
Top opening	5		
Six cubic feet frozen food storage cabinet	5		
Three styles—two models combination refrigerator and zero storage—one straight zero temperature cabinet	5		
Sliding doors	4		
Should have lower holding and sharp freeze temperatures....	4		
Drawer type freezing cabinet..	4		
Must have carefree operating and accessible for quick repair	4		
Wire baskets or racks for top opening box	3		
Warning device to indicate rise in temperature	3		
Have a sealed replaceable compressor	3		
Three temperature compartments—sharp, holding, cooling	2		
Should have two units as we have many with one breakdown—avoid food spoilage...	2		

10. Would you care to make any general comments about the frozen food business in the postwar?

A total of 544 comments were received to this question. Against the overwhelming majority of the frozen food locker plant operators express themselves most enthusiastically. Only about a half a dozen of the comments received express the fear that the home freezer will put the locker operator out of business.

One operator says, "Unless home freezers are distributed exclusively through locker plant operators, cold storage men will feel that they are being shoved out of a business they helped to promote. Another one feels that, "business will fall off when customers can buy meats unrationed." Still a third one feels that, "home freezers will close many locker plants." Another operator thinks that, "home storage cabinets will close lockers, particularly in small towns."

Another says, "I think that postwar planning is just a waste of words. I can't believe that the city man is going to buy home cabinets when he can go to the market and purchase when he wants it. Farmers will be taken care of through the locker plants."



"JOHN—HOW WILL WE
KNOW WHICH ONE
TO CHOOSE??"

"WE'LL CHOOSE THE ONLY
ONE WITH 100% PRIMARY
FREEZING SURFACE...
Deepfreeze!"

EXCLUSIVE

Deepfreeze FEATURE MEANS POSITIVE PROTECTION AGAINST FOOD DEHYDRATION, and it means a positively great postwar **Deepfreeze** selling opportunity for you!

After the war, there'll be a lot of different kinds of home freezers. But among them all, only Deepfreeze can offer patented Deepfreeze features.

The Deepfreeze alone provides 100% Primary Freezing Surface. In Deepfreeze only, a solid wall of direct-action freezing surface entirely surrounds the food storage chamber. Thus, in Deepfreeze the maximum temperature differential between refrigerant and food storage chamber is less than two degrees! And by reason of this exclusive Deepfreeze principle of construction, foods stay fresher, longer... operating costs stay low!

Yes, Deepfreeze, the first successful home freezer, is the only one that offers this vital feature—a patented feature that prevents food dehydration, that gives more food protection—more food storage space. No heat-absorber to "hog" space inside freezer.

A proved success for over six years in thousands of American homes, Deepfreeze is now a byword to millions of potential home freezer purchasers. And after Victory, Deepfreeze will be their BUY-WORD!

Full-page Deepfreeze ads in leading magazines are making ready for that time. Make your plans now for your future Deepfreeze sales and profits. Just mail coupon for all the facts.



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Motor Products Corporation
Deepfreeze Division, 2323 Davis Street, North Chicago, Ill.
Gentlemen: I am interested in getting full information regarding Deepfreeze postwar selling opportunities.

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Deepfreeze Division: 2323 Davis Street, North Chicago, Illinois
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Cartridge cases, airplane nose and tail gun turrets, blood desiccating units and industrial freezing equipment are among the war products that Motor Products Corporation is proud to be making to speed the day of Victory.

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'Imperfect' But Efficient Refrigerants Result from Search for Perfection

New Gases Will Be Found to Fill In 'Pressure Gaps,' Says Hainsworth

PITTSBURGH — "Scientists will never find the perfect refrigerant, but their continued research will develop new refrigerants to fill in the 'pressure gap,'" said Dr. W. R. Hainsworth, vice president of Servel, Inc., when he discussed "Refrigerants and Absorbents" at the thirty-first spring meeting of the American Society of Refrigerating Engineers held here.

Admitting that the many physical and thermodynamic properties requisite for a good refrigerant limit the chance for success in research, Dr. Hainsworth declared that "compounds which deviate from the rules hold the answer to new refrigerants and make research worthwhile."

HISTORY OF REFRIGERANTS

In his paper, Dr. Hainsworth first traced the historical development of refrigeration, chiefly from the practical viewpoint. The first commercial application of mechanical refrigeration occurred in 1857 in England, according to Dr. Hainsworth, and consisted of a manually operated machine employing ether as the refrigerant.

An ammonia compression machine was introduced in 1873 by Dr. Linde, and was followed three years later by a sulphur dioxide system. The

first absorption refrigerator was developed in 1815, using ammonia as the refrigerant and water as the absorbent, he declared.

"It was recognized early in the game that the ammonia absorption machine was particularly well adapted to the production of low temperatures and required low-cost energy," averred Dr. Hainsworth.

"As soon as the several types of vapor refrigeration systems attained some commercial success, many refrigerant variations were tried," he continued. "It soon became apparent that many properties other than the vapor pressure temperature relationship and latent heats were of importance in the selection of a refrigerant."

FOUR HORSEMEN OF THE REFRIGERATION INDUSTRY

"After some years of experience one after another of the fluids was eliminated from the long list until there were only four outstanding refrigerants left, namely ammonia, carbon dioxide, methyl chloride, and sulphur dioxide. These four horse-men of the industry carried the load during a relatively long period of healthy growth."

The search for new refrigerants continued, however, and gradually extended deeper into the field of organic chemistry, especially in the endeavor to find suitable combinations for absorption systems, he said.

"In selecting favorable combinations, the refrigerants are naturally the low boiling compounds and the absorbents the high boiling compounds. The differential should be as great as possible, although this is by no means the determining characteristic," explained Dr. Hainsworth.

PHYSICAL PROPERTIES CHANGE NEAR ABSOLUTE ZERO

"The story of refrigerants is so intimately associated with the scientific and industrial progress that it is impossible to divorce one from the other," he continued. "Fundamental scientific studies of the behavior of matter within a few tenths of absolute zero have revealed such strange phenomena as practically zero electrical resistance in metals; a current induced in a metallic ring can still be detected long after the inductive source is removed; furthermore, specific heats approach zero."

"To attain these temperatures scientists have used cascade systems wherein liquid air, liquid hydrogen, and liquid helium (B.P.—452° F.) are the refrigerants used in series. It is interesting to note that the latent heat of evaporation also approaches zero at these low temperatures, therefore vaporization of liquid helium becomes less effective as absolute zero is approached."

LOW TEMPERATURE RESEARCH INDICATES COMMERCIAL USE

"This low temperature research and development of special techniques is the forerunner of wide commercial usage which has already been extended to temperatures lower than —100° F. in many fields, as well as the commercial production of liquid air and liquid oxygen at temperatures in the neighborhood of —300° F. In the latter case, the air being liquefied is its own refrigerant. It is interesting to note that hydrocarbon refrigerants, which have been used extensively in the oil industry are again coming into their own for a variety of special extremely low temperature applications."

CITES CARRIER'S EXPERIMENTS WITH AIR CONDITIONING

Dr. Hainsworth next touched briefly on the development of refrigerants for air conditioning, starting with Dr. Willis Carrier's experiments with centrifugal compressors in 1919 incorporating dichlorethylene (known to the trade as "Dielen"). According to Dr. Hainsworth, Dr. Carrier next used methylene chloride, which he dubbed "Carrene No. 1."

Later the "Freon" group was developed in an effort to provide a low boiling refrigerant which was non-

toxic and non-flammable.

The research of G. F. Zellhoeffer, M. J. Copley, and C. S. Marvel, which began in 1930, and led to the formulation of a new "practical working theory" for refrigerants was accorded high praise by Dr. Hainsworth.

"It was concluded that in some fluids (refrigerants and absorbents) there were residual charges which tend to combine," explained Dr. Hainsworth. "The presence of the strongly electron-attracting halogen atoms on the carbon of one of the 'Freon' refrigerants, for example, loosens the hydrogen and makes it available for coordination with an atom in the solvent. The solvent should contain a 'donor' atom in the form of oxygen or nitrogen which becomes loosely bonded to the hydrogen of the refrigerant. Applying this theory, many new compounds were synthesized and several thousand combinations investigated."

ANOTHER APPROACH TO PROBLEM OF ABSORBENT UNITS

"The work done by the research engineers of Servel, Inc., serves to illustrate another approach to the problem," said Dr. Hainsworth. "It is generally agreed that the absorbent must have a greater affinity for the refrigerant than corresponds to the ordinary solubility laws."

"Water has an affinity for ammonia and far greater quantities of ammonia gas can be dissolved in water than nitrogen, for example, which follows close to the perfect solution laws. When ammonia is dissolved, heat is liberated and this constitutes a crude measure of the affinity. Very little heat is liberated when 'Freon' is dissolved in water."

MIXING TEST IS USED

"One phase of the search, therefore, involves a mixing test and observation of the rise in temperature of the mixture. Another test is the determination of the vapor pressure temperature relationships of the mixture in varying percentages as compared with the pure fluids. By far the greater number of combinations can be weeded out by these tests. The promising combinations must then be examined with respect to all the other necessary and desirable characteristics."

Considerable study was made of diethylene trimaine for use in absorption machines with water as the refrigerant, and tests indicated that this compound was suitable for an evaporative cooled unit, but not so suitable for use in a straight air-cooled air conditioning unit, not practical for domestic refrigeration and low temperature applications, according to Dr. Hainsworth.

SOME COMBINATIONS MISLEADING

"Some combinations of fluids in which both refrigerant and absorbent are organic compounds offer possibilities; others are misleading," he continued. "An example is ethylene chlorhydrin for the refrigerant and

diethylene triamine for the absorbent. The temperature rise on mixing in this case is over 40° C. It was soon noted that a plastic-like material formed in the mixture after standing awhile. This was discouraging to the engineer seeking new fluids, but may be a lead for the chemist looking for new plastics."

SERVEL RESEARCH TURNS TO INORGANIC COMPOUNDS

While the search for new refrigerants and absorbents continues, said Dr. Hainsworth, Servel, Inc. turned to inorganic compounds for its new all-year gas air-conditioning system, using water as the refrigerant and lithium bromide solution as the absorbent.

"Thus it appears that the inorganic chemist cannot be excluded from these endeavors as long as so many of the advantages and disadvantages of organic refrigerants and absorbents are marginal in nature."

SEES IMPROVED EFFICIENCY IN NEW DEVELOPMENTS

"It is possible that when new refrigerants and absorbents do appear they will be of a type which will permit the use of smaller equipment without much change in operating efficiency," concluded Dr. Hainsworth.

Commenting on the paper, H. G. Brandt of Carrier Corp. emphasized the need for more refrigerants to meet the increasingly great ranges of refrigeration applications. He reminded his listeners that manufacturers cannot supply machines using the best refrigerant for specific applications, but must compromise.



Where the firing is, you can look for



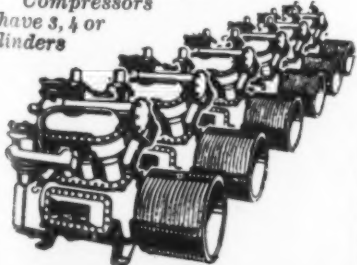
Refrigeration

Four hundred and fifty-five more Navy combat vessels are now being equipped with Frick machinery! And that machinery must stand the shock of broadside firing from all the ship's guns; only well-made equipment can "take it." Among other jobs, some of these Frick machines will perform the vital service of air conditioning control rooms. Constant temperatures are necessary for the accurate recording of precision instruments.

Refrigeration is playing an absolutely essential part in winning the War—whether for keeping foods fresh, making explosives, drying penicillin, doing quick-freezing, or furnishing ice to field kitchens right behind the firing lines.

If you need controlled temperatures, from 80 degrees above to 100 below zero, get in touch with the nearest Frick Branch or Distributor.

Frick "Eclipse" Compressors have 3, 4 or 6 cylinders



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THE SYMBOL OF
Modern
**REFRIGERATION
CONTROL**

The name HONEYWELL is first a symbol, identifying controls and control systems for the refrigeration industry. The importance of this symbol is dependent upon two tests—first, the performance of these controls and control systems; secondly, the ability of the manufacturer to anticipate and meet the needs of the refrigeration industry.

HONEYWELL has proved itself under both requirements. The dependable per-

formance of M-H controls is known and accepted by refrigeration engineers everywhere. The many different controls adapted to war-time needs of the refrigeration industry are typical of Honeywell's ability to meet changing demands. Remember, Dependable Controls Cost Less than Service.

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THE POLARTRON SYSTEM OF FROST-FREE REFRIGERATION

MINNEAPOLIS
Honeywell
CONTROL SYSTEMS

There Are Two Sides To Every Question

By E. C. Burgin

(Continued from the June 19 issue)

Two nations squabbling is nothing new, and the consequences do not have to be serious, but in this case I like to be on record as having voiced a warning and to have called the attention of the reader to the fact that this time the consequences are most serious.

I base my warnings on the teachings of past history, on my knowledge of the people and of the international factors involved, and if I bring these facts to light it is with the hope that you will react, and no longer sit unconcerned and look in silence at the dismal picture this continuous blundering is making.

So let us go back a few hundred years to the time in Europe when religious persecutions, poverty, and plagues were responsible for large migrations that produced the inhabitants of the three Americas.

Fate was again kind to Argentina by placing us in a temperate climate, by giving us unbelievably rich soil, and by locating us at the farthest end of South America. The result was that when this great migration started, the immigrants poured into the nearest places, they roamed all over looking for gold, they engaged in slave trading and anything that

would make quick money.

From this wave of ruthless invaders we were spared, since Argentina had no gold and was situated too far away. It was only when this ruthless wave spent itself that the farmers, the working class from Europe found the courage to venture across the sea.

They had heard about the richness of what we now call the Pampas, but the pampas was so far away, and it took so much more money to go down there that they kept on pouring straight across.

Only the thrifty, hardworking people could afford to come to our plains. This migration formed the backbone of our country. These people came to work our plains, and they were not interested in slave trading. This is why we today are a white nation with no racial nor religious problems. Add to this our great national resources and financial strength, and you will have the reasons why Argentina will be today, tomorrow, and the next day, the leading factor in South America.

Let us stay back in the year 1839, as I like to quote a paragraph from the answers given to John Gunther by an Argentine:

WE HAD A GOOD START

Do you know that:

"William Wheelwright, a citizen of Pennsylvania, also established the first steamship line between Europe and South America, the well known Pacific Steam Navigation Company? That in the year 1839 Mr. Wheelwright, foreseeing the immense trade that Argentina and the rest of South America were capable of developing, came to New York and presented his scheme to Aspinwall, Garrison, Astor, Vanderbilt, and other capitalists, who rejected it? That Mr. Wheelwright, disgusted, went to England, secured the capital, established his line, and in so doing turned the whole course of South American commerce from its natural channel? That Chile and Argentina have erected fine monuments to Mr. Wheelwright as being 'The Father of their Foreign Commerce?' That in 1852 there were in the harbor of Buenos Aires 600 vessels from the U.S.A., more than double the number from all other nations combined, and that by 1888 only 2% of the shipping reaching Argentina belonged to the U.S.A.?"

The blunders committed against Wheelwright were only due to lack of vision and indifference, consequently there was a certain amount of business lost to the United States and no major damage was done. But is this a parallel case to our problem of today? Most certainly not!

In 1839 it only meant a loss of business or rather a loss of a market. Now it means that if the unfriendly

Editor's Note: This is the second and concluding instalment of an article by Mr. Burgin, who is an export factor residing in Detroit, and who has had a long record of experience in the refrigeration industry. He has recently returned from South America, where he was distressed to note the deterioration of U. S. commercial and political relations.

Believing it to be a matter of misunderstanding on the part of both parties, he is attempting to present in this article the viewpoint of Latin America, particularly Argentina. While in that country he gave out an interview which was published in *La Prensa*, Argentina's powerful newspaper, attempting to present the viewpoint of this country.

The editors see in his efforts toward trying to influence better understanding between all the nations of the America's a step in the right direction. For our future diplomatic, political, and commercial welfare, the public opinion of the peoples of the America's should present a truly united front.

public sentiment does not change, and if the press will continue the campaign of magnifying the news, and if your powerful government will browbeat us into submission, you will not only lose the business from Argentina (one of your best customers) and hand this business over to Europe on a silver platter, but what is worse, you will frighten her and all the rest of the South American republics to the extent that many will seek alliances with other strong nations either in Europe or wherever they may be in order to offset and counterbalance, the interfering actions of the U. S. Government.

NO "BROWBEATING" TACTICS

You will defeat the very purpose you are after. As Mr. Beals so well says, "Any attempt to browbeat Argentina would be Hitleristic and a colossal blunder. 'We should harvest ill will for the future,' and 'would be quite a little of the stupidity that featured the tactics

of George III and his clique against the American colonies so long ago."

This brings us back again to your lack of knowledge of foreign places which makes you ripe to believe anything and anybody, regardless if he is qualified or not to express an opinion. I like to quote here Mr. Franklin Johnston of the "American Exporter," a sterling authority on Latin America:

BUSINESSMEN'S VIEWPOINT

"So this is Buenos Aires! Truly one of the wonders of civilization. That here in South America should be the second largest Latin City in the world, second only to Paris.

"The third city in size in the Western world and vibrating with vim and vigor of over two and a half million people.

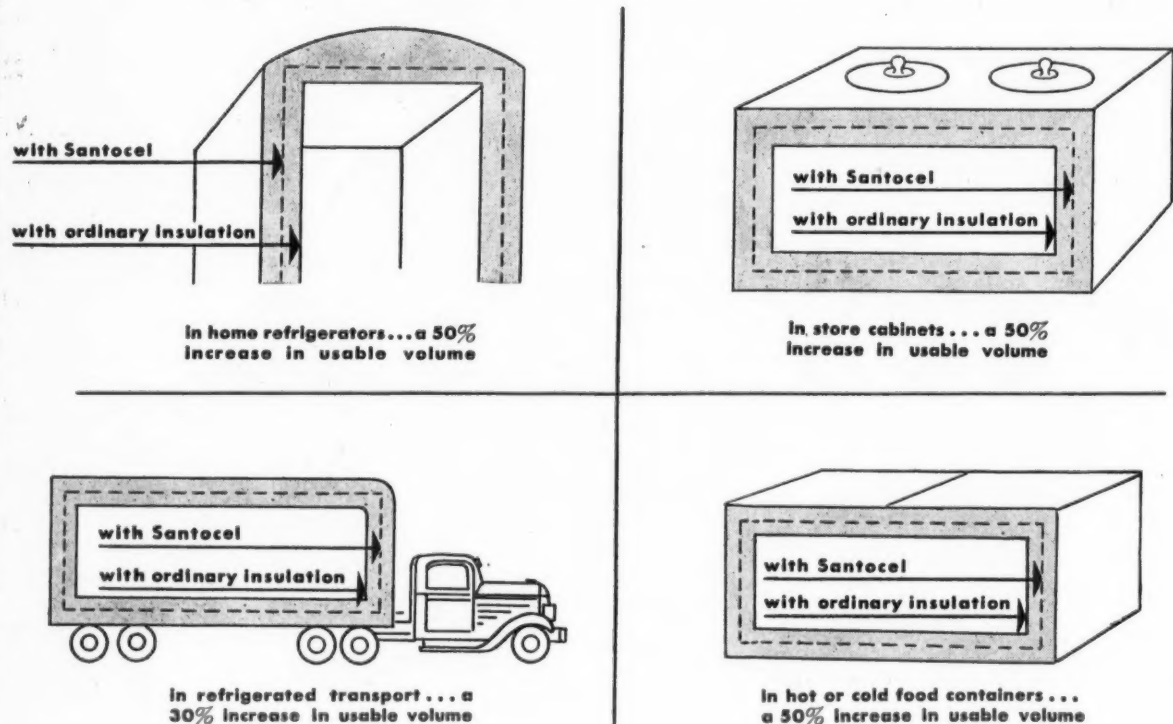
"Such avenues and buildings, such parks and boulevards. As Cosmopolitan as New York, as stimulating as Chicago. Beautiful shops, fine hotels, innumerable good restaurants. Business on the grand scale. Throngs of people, push, pep, dash. Buenos Aires has everything.

"It 'gets' you. So much so that one of the outstanding impressions I have is that so many of the Americans who have made their business careers—and a lot of money—here never go back to the States.

"Let me say that I have never met a finer group of businessmen than the American colony in Buenos Aires. Nor one made up of more patriotic men. Nor men with a higher sense of public responsibility in business. The radicals and intelligentsia who like to prate about the Yankees exploiting South America would have all their theories collapse if they really got to know these men.

(Concluded on Page 25, Column 1)

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- 2. Density:** Although low for a free-flowing powder, Santocel's density is about equal to that of other loose fill insulators and is higher than some bat types and the foil types.
- 3. Application:** Santocel can be applied by building a retaining jacket about the object to be insulated, usually of lightweight sheet metal, and filling the intervening space. Being free-flowing, it can be easily applied to such a construction.
- 4. Settling:** Santocel settles to a stable density about as rapidly as other fill types.
- 5. Moisture sorption:** Like all commonly used insulators, Santocel will not pick up significant quantities of water from the air. Practical tests have also shown that, when Santocel is applied to objects substantially below room temperature, no significant amounts of water accumulate through condensation.
- 6. Safety:** Although Santocel is a silica, to the best of Monsanto's knowledge, based on unpublished work by the U. S. Public Health Department, it is not silicotic because of its highly unique structure. A mask is recommended for the comfort of handlers, however, since it is a light powder and therefore dusty.

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Views on Our Trade Relations As Seen By Refrigeration Exporter

(Concluded from Page 24, Column 5)

"They grieve that Argentina has seen fit to hold out so stubbornly, the only nation in Latin America which has not at least broken off relations with the Axis. But their affection for Argentina and their gratitude for the opportunity Argentina has given them, and the treatment they have received as businessmen from the government and people is outspoken.

"But many of these men, and their families, will never return to the States. They've taken root here. I had tea one Sunday with four generations of one American family. The oldest, the great grandmother, a spry and charming old lady, graduated from college at Oxford, Ohio, in 1873. The youngest was born here three years ago and has three uncles in the United States armed forces."

"And these splendid people are held up to scorn and ridicule by nearly every penny-a-line or dollar-a-word writer who comes down here, spends a week in Buenos Aires, a month in all of South America, and then goes home and writes a book.

"BELIEVE NONE OF THEM."

If I hadn't lived in the United States for 19 years, and if I didn't know that the rank and file of the Americans do not know what is going on in foreign affairs, and that in their clean honest American way of thinking they do not even suspect that they are partly responsible for today's misunderstanding between the United States and Argentina due to their lack of foreign knowledge and mis-information of what is happening, I would certainly keep quiet. But it is in gratefulness for the way I have been treated here, in response to the warm friendship of the people I do business with, and in respect to the great honesty of purpose of the average American that I bring these things to light.

PEOPLE ARE GETTING UNEASY

Analyzing the latest happenings, the first thing that becomes evident is the unrest of most South American countries. I have just returned from a six months trip to that continent and I can assure you that the people down there are getting mighty uneasy.

They see the way Argentina is being treated, they see the way American money is pouring into their countries, they see the manpower in your armies down there, and they are wondering what is behind all this, what it is going to cost them in retribution. Let me quote here Senator Butler's warning:

"A not inconsiderable part of this expenditure, the statement made clear, is unnecessary and harmful. In particular, our inexcusably high wage scales are upsetting the local economics and creating ill will. 'In every instance known to the committee,' the report declares, 'these wage scales are much higher than the native wages. Since there was little competing employment in any of these areas, the additional

incentive was not required to obtain workers. As a result of these higher wage-scales, misunderstanding and resentment have been created among the local people and unrest and jealousies among the workers.'

"Bungling and Waste—much of it due to the many U. S. agencies vying with each other for a place in the spending sun—are apparent. 'It is necessary,' says this nonpartisan statement, 'to report criticism of federal agencies which, in nearly every country, appear to get under each other's feet in the scramble to advance their respective interests. There is great need for coordination of effort and singleness of purpose'.

"The Brazilian people," he continued, "are polite but they do not conceal the doubts they feel about the presence of so many Americans in their country. They refer to the coming of the North Americans as 'an invasion of friendly paratroopers' and they put an ironic inflection on the word 'friendly.' Here in Rio alone are several thousand American civilians connected with the U. S. Purchasing Commission, the Office of the Coordinator of Inter-American Affairs and several other agencies.

"An American official who has had close-up opportunity to observe our recent spending policies asked me to quote, verbatim, this conclusion he has reached: 'Throwing money around the way we do is bad for the people and they resent it. Because we need to buy certain materials in this country is no excuse, as the people see it, for our attempting to come in and operate enterprises for them. They hotly resent the idea that they can't do their operating themselves. The government of this country and its people, are exceedingly jealous for the maintenance of their national sovereignty. They are highly suspicious of what we may do to it.'

Here again it seems that the Good Lord is keeping an eye on Argentina. When the American tax-payer gets the figures of what has been spent in South America, he will get the shock of his life. However he won't be able to blame Argentina for this, as none of it went down there.

So let's see how Argentina is defending herself. First, she signed a most important trade agreement with Chile, and the railroad across the Andes was rushed to completion (when I went by car from Argentina to Chile, I saw about 1,000 men working on that railroad). Second, loans were made to Bolivia, and another commercial agreement signed with them, and also a railroad is being built for them. Third, a trade agreement with Uruguay and Paraguay was signed (General Morinigo, president of Paraguay, was recently in Buenos Aires on a visit). Fourth, a very important trade agreement is now to be signed with Brazil. Fifth, another was signed with Cuba. Sixth, next in line are Mexico, Venezuela and Canada.

Let us now look at the map, and let us compare how much area of

America this represents, and with this picture clearly before us, let us ask this question: Is Argentina losing face with the rest of the Americas? Of course not! But is the United States losing prestige?

You may well ask how was all this possible, but the answer to anybody familiar with Latin America is obvious. All you have to do is look at the outstanding characteristic of all Latin Americans, and the first thing that will strike you is that they are uniformly a very sentimental bunch of people, strongly united by family ties and friendship.

SOME THINGS THEY HAVE DONE

Argentina, being one of them, plays up to this sentiment to the fullest extent. The best example can be given by a few comparisons. About a year ago there was an acute shortage of wheat in Venezuela, and the price of bread was going sky-high, so Argentina promptly cancelled some steamship sailings to other parts and rushed the needed wheat to them.

Brazil had the same problem, so the Argentine steamer on which I sailed from New Orleans to Buenos Aires cancelled a trip to the states and made a rush delivery of supplies to Rio. Argentina has now about 100 ships plying the oceans, but they cannot keep up with the demand.

Ask what Argentina did for Cuba when the submarine blockade was on. Over 500 persons were saved by Argentine ships during the terrible sinkings off the coast of Pernambuco. During that time the Argentine steamer I was on went five days out of its way to assist, and saved in all about 140 persons.

The Latin newspapers were very free with their praise, but when this steamer arrived in New Orleans, so far as I have been able to determine, not a word was said by the American press. So with this record of Argentina's helpfulness towards their South American neighbors, you can easily imagine that the press in Latin America has always something encouraging to say about Argentina.

You may now wonder if Argentina is doing also these things for the United States. I quote Mr. Beals:

"If some acts by Argentina seem to us in our present passionate mood almost unfriendly, we should not forget that Argentina has her own rights, her own needs, and has also made numerous Wartime concessions to us. The United States is not treated as a belligerent, which means that although Argentina is theoretically neutral, she gives us favors which are not granted to the Axis. She has lightened many previous trade restrictions to favor us, and various American military missions have been hospitably received there."

In addition I wish to say that when coffee became so scarce in the U. S., the steamer Rio San Juan made a special trip to bring a boatload of coffee and sugar from another South American country in order to relieve the acute shortage. The American food shortage would be much more serious if it weren't for the fact that about every 10 to 15 days an Argentine ship arrives in New Orleans loaded with cornbeef, cheese, butter, fruit, wine, poultry, eggs, etc., bringing in addition also the much needed hides to relieve your leather industry.

If you Americans would know the part we are playing in your assistance, you would not have approved, I am sure, the tactics used against us.

Here is an example: When meat became scarce in the Canal Zone, 3,800 tons of it were rushed to Panama by steamer. But our meat had to be labelled "dog meat," and so that the officials would have their conscience clear for having imported Argentine meat, they declared that about 400 tons were "contaminated," and these 400 tons were promptly bought by Cuba.

May I ask if this is the democratic way of promoting Pan-Americanism? Let me also ask if you were a South American would you not feel uneasy when you see this deliberate attempt to browbeat another country?

So when I shake hands in Latin America they don't ask "what in hell is the matter with Argentina" . . . they know, and invariably have something encouraging to say, in fact, what they feel and say would surprise many of you.

Here again I like to remind you of my warning! You are now being judged by all Latin America. You may well become the leading world power, and therefore the whole world will be watching you with apprehension. They will want to know if you are still as free and democratic as you used to be . . . if your government and labor unions are still guided by the will of the people.

Above all what everybody will want to know is if this world power is going to your head, and if you will become one of those nations that will strike first and ask questions later.



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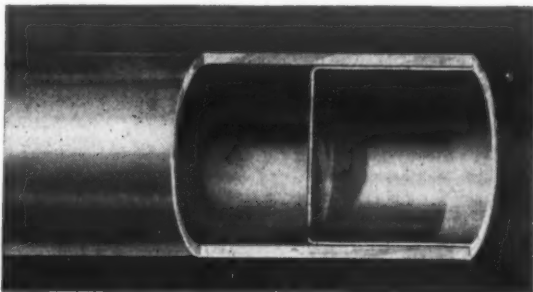
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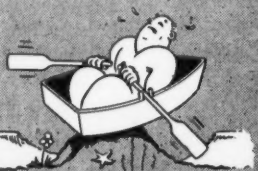
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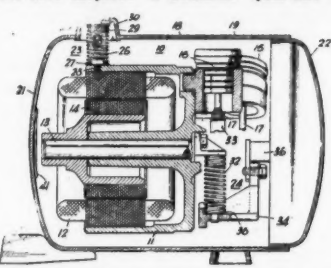
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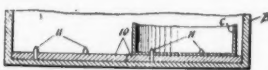
Weeks of May 30 & June 6

2,349,845. **REFRIGERATING APPARATUS.** Clifford S. Cody, Springfield, Mass., assignor to Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., a corporation of Pennsylvania. Application Feb. 5, 1942, Serial No. 429,631. 3 Claims. (Cl. 230-58.)



1. The combination of a horizontal shaft motor-compressor unit, a fluid-tight casing therefor having a bolt opening therein, a vertical tension spring connected to one end of the unit, a spring holder having a screw-threaded opening therein connected to the upper end of the spring, a bolt extending through said opening in the casing and screw-threaded into said opening in said spring holder, and a spring or springs connected between the other end of said unit and the casing for supporting the unit at said other end.

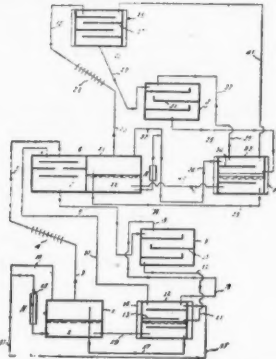
2,350,075. **HOLDING DEVICE FOR FOOD CONTAINERS IN REFRIGERATING DISPENSING CABINETS.** Charles I. Smith, Glendale, and Thomas J. Ball, Pasadena, Calif. Application Aug. 21, 1943, Serial No. 499,738. 4 Claims. (Cl. 248-346.)



1. In combination, a box-like cabinet having bottom and side walls and open at its top, a container mounted in said cabinet so that the contents thereof may be dispensed therefrom thru the open top of the cabinet, a plate-like support mounted on the bottom wall of the cabinet

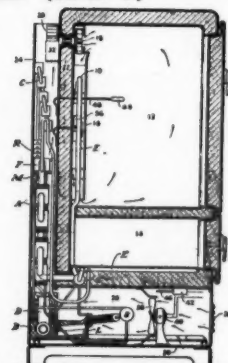
as a seat for the lower end of the container, and pinlike projections extending upwardly from said support and penetrating a wall of the container to hold the latter against turning on lateral movement relative to said support while the contents of the container is being removed, said container being removable from said pinlike projections and the cabinet by forcibly lifting the container upwardly.

2,350,115. **REFRIGERATING SYSTEM.** Abram Katzow, Indianapolis, Ind. Application May 25, 1940, Serial No. 337,275. 7 Claims. (Cl. 62-179.)



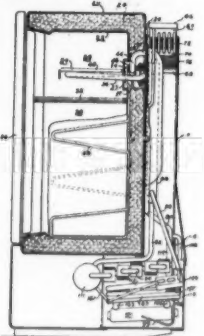
1. That method in the art of refrigerating through the agency of an absorption system which includes continuously expelling volatile substance from a solution of volatile and relatively non-volatile substances, continuously condensing the expelled volatile substance at relatively high temperature while the volatile substance gives up heat, with this heat expelling refrigerant from a second solution of refrigerant and absorbent, liquefying the refrigerant from the second solution, and evaporating both the volatile substance and the liquid refrigerant at sub-atmospheric temperatures to produce refrigeration.

2,350,249. **REFRIGERATION.** Ralph C. Osborn, North Canton, Ohio, assignor to The Hoover Co., North Canton, Ohio. Application Sept. 4, 1941, Serial No. 409,448. 17 Claims. (Cl. 62-5.)



6. A domestic refrigerator comprising, a cabinet having an insulated food storage compartment and a separate air passage for circulating air over the heat rejecting parts of the apparatus, a turbine in said air passage constructed to be driven by air flowing therethrough, and a fan positioned in said food storage compartment and connected to said turbine to be driven thereby.

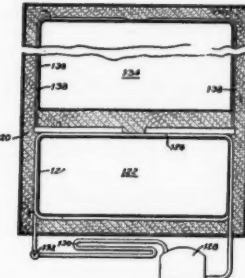
2,350,347. **REFRIGERATING APPARATUS.** Richard S. Gaugler, Dayton, Ohio, assignor to General Motors Corp., Dayton, Ohio, a corporation of Delaware. Application May 31, 1941, Serial No. 395,944. 14 Claims. (Cl. 62-119.5.)



4. Absorption refrigerating apparatus including an absorption cooling unit in the form of an elongated conduit means having metal walls and having an inert gas inlet at one end and a gas outlet at the other end, the metal walls of said conduit means adjacent the gas inlet being adapted for arrangement in heat exchange relation with a first medium to be cooled and being provided with means for increasing the area of heat exchange relation with said first medium, wall means for separating a portion of the metal walls of said passage adjacent said gas outlet from said first medium to be cooled so as to be out of direct contact with said first medium, a secondary refrigerating system for maintaining a second medium at a

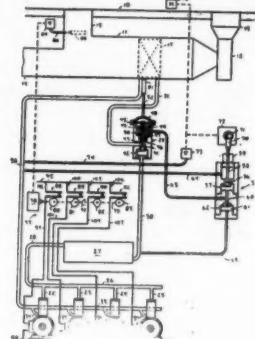
higher temperature than the first, said secondary refrigerating system having its condensing portion in heat exchange relation only with said portion of the metal walls adjacent the gas outlet of the cooling unit for increasing the evaporation of refrigerant into the inert gas as it leaves the cooling unit.

2,350,348. **HEAT TRANSFER DEVICE.** Richard S. Gaugler, Dayton, Ohio, assignor to General Motors Corp., Dayton, Ohio, a corporation of Delaware. Application Dec. 21, 1942, Serial No. 469,649. 12 Claims. (Cl. 62-125.)



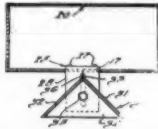
1. The method of transferring heat from one point to another by means of a closed system wherein a volatile liquid is successively evaporated and condensed at substantially the same pressure which comprises evaporating the liquid refrigerant at one level, condensing the vapor at another level below the point at which evaporation takes place, and returning the liquid from the point of condensation to the point of evaporation by capillary action.

2,350,406. **DIRECT EXPANSION AIR CONDITIONING CONTROL SYSTEM.** William McGrath, Philadelphia, Pa., assignor to Minneapolis-Honeywell Regulator Co., Minneapolis, Minn., a corporation of Delaware. Application May 28, 1941, Serial No. 395,584. 22 Claims. (Cl. 62-6.)



1. In an air conditioning system, in combination, a direct expansion type refrigerating apparatus including an evaporator, means comprising a plurality of compressors whereby the amount of refrigeration produced by the apparatus may be varied, means for passing air to be conditioned over the evaporator where by the air is cooled and dehumidified, means responsive to a condition of the air being treated for controlling said compressors to control the amount of refrigeration produced by the refrigerating apparatus, and means including a valve controlling the supply of refrigerant to the evaporator, said last means being responsive to evaporator pressure and arranged to control the admission of refrigerant to the evaporator in a manner to maintain the evaporator pressure substantially constant while the amount of refrigeration produced by the refrigerating apparatus is varied.

2,350,514. **AIR DEFLECTOR FOR AIR DUCTS.** Allen F. Livar, Dayton, Ohio, assignor to Chrysler Corp., Detroit, Mich., a corporation of Delaware. Application Oct. 30, 1942, Serial No. 463,871. 3 Claims. (Cl. 98-40.)



1. An air distribution system comprising an overhead duct having a longitudinally extending slot through its lower wall, a vertical plate extending from the lower wall of said duct at each end of said slot, an opening through each of said plates substantially in a vertical plane through the longitudinal centerline of said slot, an air deflector comprising a pair of sloping sides of substantially the same length as said slot and extending downwardly from a central ridge, means to support said air deflector beneath said slot comprising a pair of longitudinally extending pins adapted to pass through said openings and projecting from the ends of said air deflector in a plane substantially bisecting the angle formed by said sloping sides, the arrangement being such that the plane bisecting said sloping sides may be cantled with respect to the vertical whereby to cause more air to be deflected toward one side of the duct than toward the other, and means to hold said deflector in cantled positions.

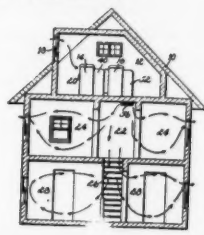
2,350,875. **METHOD OF MANUFACTURING REFRIGERATOR SHELVES.** Clifford E. Carney, Detroit, Mich., assignor to General Motors Corp., Detroit, Mich., a corporation of Delaware. Original application April 25, 1940, Serial No. 331,497. Divided and this application Jan. 14, 1942, Serial No. 426,656. 2 Claims. (Cl. 29-160.)



1. The method of manufacturing shelves or the like having supporting side rails formed from a hard metal and interconnecting cross members formed from relatively softer metal, which comprises the steps of providing the side rails with a plurality of opposed openings entirely circumscribed by walls and in which the size of the openings is somewhat smaller than the initial size of the end portions of the cross members, assembling the parts with the opposite end portions of

the cross members aligned with said openings, moving the parts so aligned in a direction longitudinally of the cross members to bring them into engagement with one another, and thereafter deforming the end portions of said cross members by forcing them into said openings to effect a mechanical union between the side rails and the cross members.

2,350,886. **REFRIGERATING APPARATUS.** Andrew C. Freimann, Dayton, Ohio, assignor to General Motors Corp., Dayton, Ohio, a corporation of Delaware. Application Dec. 30, 1941, Serial No. 424,950. 10 Claims. (Cl. 62-6.)



1. In combination, a first evaporator, a second evaporator, means for supplying liquid refrigerant to said evaporators including refrigerant condensing means, a water coil, means for flowing air to be conditioned in thermal exchange with said water coil and thereafter in serial thermal exchange relation with said evaporator, means for supplying water to said water coil, and means for discharging the water leaving said water coil in thermal exchange with said condensing means, and means, responsive to the temperature of the air, for by-passing one of said evaporators with a portion of the air.

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CAPABLE REFRIGERATION man to take charge of household and commercial service department. Old established Frigidaire firm offers a real opportunity for experienced and ambitious man. Salary and profit sharing arrangement. Enjoy life and health in cool Colorado. Write Box 43, Colorado Springs, Colo.

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RESPONSIBLE MID-SOUTH manufacturer making complete line for Store Installations wants manufacturing executive familiar with Commercial refrigeration who can supervise design and operation of wood working plant manufacturing wall shelving and a complete line of refrigerated Equipment. Operation offers an unusual postwar opportunity. Box 1579, Air Conditioning & Refrigeration News.

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York Double Piston single acting ammonia compressors also 19x10 cap. 30 Ton Ice making chain driven 50 HP Induction Motors 3 PH 208 V. 60 cyl. each.
Ammonia evaporative condenser with 3 H.P. Blower, 1 H.P. Pump, 30 Tons.
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Brine Twinlute Pumps, capacity 500 G.P.M. Head 15 feet 5 H.P. each, 208 V. 60 cy. 3 P.H.
Kelly Bros. Heat exchanger.
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FACTORY SUPERINTENDENT. Experienced engineer equipped to design dies, set up machinery, preferably with experience in refrigeration low side field. Responsible position with complete production authority and unlimited possibilities. To take charge of entire plant operation for leading manufacturer. Write fully. Our employees know of this advertisement. Box 1581, Air Conditioning & Refrigeration News.

CHIEF ENGINEER, experienced, engineering, research department nationally known manufacturer. Middle West. Diversified line products, well established market, excellent present, postwar possibilities. Factory, drafting room practice essential. Capable handling men. This represents real opportunity, permanent career for right man. Write fully, strict confidence, recent photograph. Box 1578, Air Conditioning & Refrigeration News.

EXPORT REPRESENTATIVES and service engineers. Large domestic and commercial refrigeration manufacturer doing world wide business is interested in interviewing men with good background for both retail and wholesale selling, also servicemen for employment abroad in postwar. Write giving full details, experience, and references. Box 1584, Air Conditioning & Refrigeration News.

POSITIONS WANTED

SERVICE MAN. 38 years old. Eighteen years experience in all types of domestic and commercial refrigeration and air conditioning service work. Can join your company highly recommended. Now engaged in independent work in southern city. In reply state salary and size of company. Box 1582, Air Conditioning & Refrigeration News.

EQUIPMENT WANTED

USED EQUIPMENT WANTED: Air conditioning and refrigeration systems and machinery including self-contained units, coils, high-sides, shell and tube coolers and controls. Highest cash for large sizes. We urgently need two 15 HP motors and two compressors without condensers. **E. M. FAIRBANKS CO.**, 475 Fifth Ave., New York 17, N. Y.

AIR CONDITIONING equipment of all sizes including Evaporative Condensers where possible. Highest prices. **J. E. HEYMAN**, 251 W. 98th St., New York 25, New York.

EQUIPMENT FOR SALE

BEER COOLERS direct draw dispensing cabinets for 2 half barrels. Brand new. Complete with faucets and fittings. \$325.00 F.O.B. Philadelphia, Pa. Milk Coolers 4 and 6 can capacity. Complete self-contained with General Electric condensing units. Call Rittenhouse 6359 or write, **JORDAN REFRIGERATOR COMPANY**, 235-37 N. Broad St., Philadelphia 7, Pa.

DRY BOTTLE COOLERS. ELECTRIC. Equipped with vending machine, blower coil, and self-contained 1/4 H.P. Universal Cooler Corporation unit ready to plug in. Brand new. Streamlined. No priority required. Price \$132.50 net. **GENERAL REFRIGERATOR COMPANY**, 5400 Eadom St., Philadelphia, Pa.

ICE REFRIGERATED BOTTLE COOLERS. Three-case capacity. Streamlined. All steel, heavily insulated. Casters. Also useful for cooling fish and other products or storing cracked ice in hotels or taverns. Suitable for homes. \$19.00 net each, f.o.b. Philadelphia. Brand new. No priority required. **GENERAL REFRIGERATOR COMPANY**, 580 North Broad Street, Philadelphia, Pa.

FOOD FREEZERS, rebuilt and guaranteed. Immediate shipment. Write for illustrated circular and price list. **EQUIPMENT SALES CO.**, 3915-23 Market St., Philadelphia 4, Pa.

AIR CONDITIONING self-contained units—3 and 5 ton. Brand new in original crates. Guaranteed by reputable manufacturer. Delivery at once. Priority required. Write Box 1577, Air Conditioning & Refrigeration News.

3 H.P. and 5 H.P. Brand New water cooled condensing units complete with motors and starters. Reasonable. **EVERLAST**, 444 Fourth Ave., New York City.

FOUR Air Conditioning Blowers complete with coils and 3 H.P. electric motor—blower, housing, expansion valves, etc. capacity approximately 30 tons—York—practically new. Reasonable. **EVERLAST**, 444 Fourth Ave., New York City.

MILK COOLERS with General Electric Condensing Units. The last of this season's stock. Four can models only—double or single row equipped with 1/4 H.P. G-E. All new guaranteed equipment. Immediate delivery. Prices right. Write or wire today. **RAMSEY-BENNETT COMPANY**, 727 Bolivar Rd., Cleveland 15, Ohio.

WATER COOLERS Ice Refrigerated. Model S, 65 pounds ice capacity \$49.00. Model L, 150 pounds \$69.00 net f.o.b. Detroit. Price includes coil and glass filler faucet. Construction Stainless steel top, galvanized metal base, welded metal legs. Samples shipped 20% deposit with order, balance COD. **SPECIALTIES DISTRIBUTING CO.**, 525 East Jefferson, Detroit.

FOR SALE: Milk Coolers, Bottle Coolers, converted Freezers. 1,000 complete High-Sides Frigidaire, Kelvinator 1/4 H.P. to 2 H.P. Motors up to 5 H.P. send for list and price. **EDISON COOLING CORPORATION**, 310 E. 149th St., New York, N51, New York.

Climate Institute Names
Schanuel Secretary

ARTHUR E. SCHANUEL

(Concluded from Page 1, Column 2)

chairman of the board, Carrier Corp.; vice chairman, L. N. Hunter, vice president, National Radiator Co.; Finance Committee, officers of the Indoor Climate Institute.

Local Chapters Committee, chairman, Jack Searls, sales manager, White Rodgers Electric Co.; Postwar Personnel and Training Committee, chairman, J. R. Scott, asst. to the president, L. J. Mueller Furnace Co.; Speakers' Bureau Committee, chairman, John Knighton, sales manager, Servel, Inc.; Promotional Committee, chairman, C. T. Burg, general sales manager, Iron Fireman Mfg. Co.

A two-day Open Forum is planned by I.C.I. to be held in Detroit, at the Book-Cadillac Hotel, Sept. 21 and 22. The program for this important meeting will draw leaders from all over the country in the many related industries. Outstanding speakers are scheduled to highlight general assembly meetings, the banquet, and group seminars.

Following the Open Forum, committees of I.C.I. and its membership will be coordinated into a program of research and promotion, that will focus the attention of Americans upon the vital subject of indoor climate and its effect upon human comfort, health, and efficiency.

As indicated by the various committees, the work to be undertaken by I.C.I. has many ramifications, but all are directed at the fundamental objective of education. The purpose of I.C.I. may be specifically described as follows:

- (1) To educate the public on the advantages of greater indoor comfort and better health.
- (2) To cause the public to place the proper value on adequate, modern heating equipment so home owners will not insist upon cheap, inferior installations in order to save a few dollars—the difference between a good and a bad system.
- (3) To encourage the public to demand higher living standards, thus assuring manufacturers of indoor climate equipment and all others involved, a higher percentage of the construction dollar.
- (4) To act as a clearing house of unprejudiced information for the public, professions, press, trades, associations, manufacturers, and service organizations.
- (5) To assist educational institutions in offering courses of instruction in the many diversified branches of the heating, cooling, and air conditioning industries.
- (6) To encourage and cooperate

with scientific research institutions, organizations, groups, and clinics in the analysis of the effect of controlled indoor climate upon human health, comfort, and efficiency.

(7) To cooperate with the trade associations in making known the respective accepted standards so that the public will be in a position to take advantage of the extensive research conducted by the various associations and authorities and reflected in the products and systems meeting the established standards.

The Indoor Climate Institute has moved into new offices in the Penobscot Building, Detroit.

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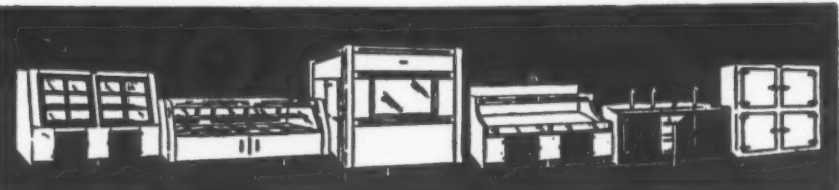
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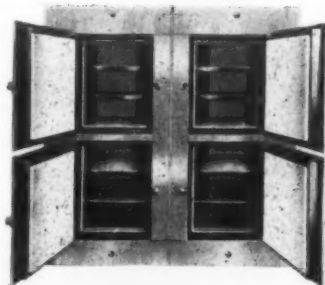
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• & DISPENSING
• FROZEN FOODS

• NORMAL
• TEMPERATURE
• WALK-INS & REACH-INS

Plant Planners Look To Air Conditioning

(Concluded from Page 1, Column 3)

ployes, according to George A. Bryant, president of the Austin Co., industrial engineering and building firm. Vast improvements made in air conditioning during the war under the impetus of large scale production for marine and other installations has made these cooling units more efficient and cheaper, he declared.

Another factor which may lead to increased air conditioning in factories is the widespread use of fluorescent lighting, Mr. Bryant declared. Heat output from lights, an important source of the cooling load, is considerably less from fluorescent lamps. The Austin Co. has also developed a method of insulating factory walls and roofs, consisting of a 7-inch wall of fiberglass and steel, which has as much insulating effect as 80 inches of brick, it is claimed.

Improved working conditions are expected to pay dividends to employers, architects say. With air conditioning, less noise due to installation of sound-deadening materials; better restaurants, health, and first aid facilities; and convenient parking lots, the new postwar factories will be able to attract the more efficient employees from competitors with a consequent reduction in over-all production costs, it is pointed out.

Ceilings on Rebuilt Boxes Help To Black Market, Says Cincinnati Dealer

(Concluded from Page 1, Column 5)

trained field men and an apprentice, with four trained shop men and four apprentices, as compared to its pre-war crew of 26 expert repairmen. They can't service even their regular customers, he said, that short-handed.

It's true the War Manpower Commission's refrigeration training school is now under way in Cincinnati, he acknowledged, but it opened its doors only last month, and no school is going to turn out a trained serviceman in just a few weeks' time.

Shop repairs this summer certainly will be no better off than they were last summer, he said—which was 30 days behind schedule. Field service calls were from seven to 10 days behind. Minor repairs can be made

in the shop, but motors have to go back to the manufacturer—with a several week's holdover there.

He picked out another item from the OPA's newest price listings. "Here's a 1936 box that we can sell for \$58.50, entirely rebuilt," he said. "The absolute minimum cost to us for pickup, parts and labor, and delivery, with no hitches and everything sitting pretty, is \$65."

"This town has a crying need for decent refrigerators. The money is ready, the boxes are in the warehouse—it's not surprising that a few dealers are doing a good backdoor business."

"The rest of us are working with what little we've got to work with. Our only hope is the end of the war."

Icebox Producers Can Again Use Hardboard

WASHINGTON, D. C.—Restrictions on the use of hardboard in the manufacture of domestic ice refrigerators have been removed, the War Production Board announced recently.

The previous provision limiting domestic ice refrigerator manufacturers to a maximum of 65 square feet of hardboard per refrigerator has been deleted in Limitation Order L-7-o, which was amended June 23, 1944.

As before, hardwood shorts, no longer than four feet in length or width, of varying thicknesses for use in the production of domestic ice refrigerators will be made available on a monthly basis, WPB officials explained.

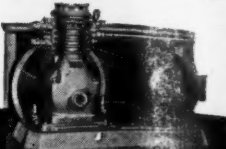


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the heavy demand for their
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BULLETIN

Maybe in past years you
have not been accustomed
to stocking parts and
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your summer "peak," but
this year WPB urges you
to anticipate as far in
advance as possible. That
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